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ABSTRACT

Designed for the purpose of furthering exchange of information and experience in the field of environmental education, this document contains an overview of nonformal environmental education development in six countries. Reports on the countries were presented during the Subregional Training Workshop on Nonformal Environmental Education for Asia organized by the Universiti Pertanian Malaysia in cooperation with UNESCO-UNEP International Environmental Education Programme (IEEP). Countries reviewed include: (1) India; (2) Indonesia; (3) Malaysia; (4) Philippines; (5) Sri Lanka; and (6) Thailand. (ML)

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COUNTRY REPORTS

SE 044 670

UNESCO-UNEP INTERNATIONAL ENVIRONMENTAL EDUCATION PROGRAMME (IEEP)

COUNTRY REPORTS

presented at

SUBREGIONAL TRAINING WORKSHOP ON

NONFORMAL ENVIRONMENTAL EDUCATION FOR ASIA

organized by

UNIVERSITI PERTANIAN MALAYSIA

in cooperation with

IEEP

18-22 November 1985
Serdang, Selangor, Malaysia

Opinions and views expressed in the country reports presented at Sub-regional Training Workshop on Non-formal Environmental Education for Asia are those of the participants and do not necessarily reflect the official position of Unesco.

PREFACE

The Subregional Training Workshop on Nonformal Environmental Education for Asia was organized by Universiti Pertanian Malaysia (UPM) in cooperation with Unesco-UNEP International Environmental Education Programme (IEEP). The workshop was held from 18 - 22 November 1985 in the Centre for Extension and Continued Education of the Universiti Pertanian Malaysia, Serdang, Selangor, Malaysia.

The objectives of the workshop were (i) to familiarize participants with the contents of a Sourcebook on Nonformal Environmental Education prepared under IEEP and obtain their comments for its revision, (ii) to explore ways and identify institutions for local adaptation of the Sourcebook in the participating Member States, and (iii) to exchange information and experience in the development of environmental education in the subregion.

Sixteen participants and four observers from India, Indonesia, Malaysia, Philippines, Sri Lanka, and Thailand attended the workshop.

The workshop was inaugurated by Professor Dato' Dr. Nayan Ariffin, Vice-Chancellor of UPM and closed by Dr. Salihan Siais, Acting Dean of Faculty of Science and Environmental Studies, UPM.

The following served the Bureau of the workshop :

Chairman	:	Dr. Mohd.Ismail Yaziz (Malaysia)
Deputy Chairman	:	Dr. J.P. Gupta (India)
Rapporteurs	:	Mr. A.K. Gunapala (Sri Lanka)
		Dr. Porferio L. Basilio (Philippine)

The Steering Committee of the workshop consisted of the following :

Chairman	:	Dr. Abdul Ghaffor Ghaznawi (Unesco)
Members	:	Dr. Mohd.Ismail Yaziz (Malaysia)
		Dr. Salihan Siais (Malaysia)
		Dr. Anhar Suki (Malaysia)
		Mr. Abdul Wahid Ghazali (Malaysia)
		Dr. Porferio L. Basilio (Philippine)
		Mr. A.K. Gunapala (Sri Lanka)

Seven resource persons presented the eight chapters of the Sourcebook in Nonformal Environmental Education under the following titles :

Chapter 1 : Overview of Nonformal Environmental Education

Chapter 2 : Implementation of Nonformal Environmental Education

Chapter 3 : The Environment

Chapter 4 : Environmental Problems

Chapter 5 : Natural Resources

Chapter 6 : Energy and Its Uses

Chapter 7 : Development

Chapter 8 : Environmental Ethics

The deliberations of the workshop have been reflected in its Final Report.

Six country reports, prepared on the basis of a common outline prepared by IEEP, were presented at the workshop by the participants form India, Indonesia, Malaysia, Philippines, Sri Lanka and Thailand. In view of the rich substantive contents of these country reports on the development of nonformal environmental education in the subregion, this document has been prepared for their dissemination to institutions and professionals for the purpose of furthering exchange of information and experience in the field of environmental education. This document contains an overview of nonformal environmental education development in the subregion and the six country reports. They are presented in alphabetical order.

Anhar bin Suki (UPM)
Abdul Ghafoor Ghaznawi (Unesco)

PREFACE

These country reports were presented during the Subregional Training Workshop on Non-Formal Environmental Education which was held on 18-22 th November 1985 in the Center for Extension and Continued Education of the Universiti Pertanian Malaysia , Serdang , Selangor , Malaysia .

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NON-FORMAL ENVIRONMENTAL EDUCATION PROGRAMME IN INDIA AN OVERVIEW

By Dr. J. P.Gupta*

Introduction

During 19th century pollution and problems of environmental degradation had been recognised as a major problem in industrialised nations of the west. Many developing and third world countries are now faced with similar problems, because in recent years large number of resource developing projects have grown with harmful consequences on the natural environment and human habitat. Thus, at the present stage, humanity is threatened by two immediate threats i.e. overpopulation and destruction of resources causing problems of imbalance between resources, developing and environment and affecting biosphere's environmental quality such as soil erosion, fresh water availability, food production, energy utilisation, pollution loading, rates of deforestation, rates of desertification and levels of soil salinization. Therefore, the problems of the relationship between economic development and environmental and social issues are the subject of serious concern and the environmentalists have been concerned in developing mechanism to encourage the optimal resources allocation and to minimize the adverse impact on environment and life support system. Our Late Prime Minister Mrs. Indira Ghandi*1 while addressing the plenary session of the UN convened conference on the human settlement in Stockholm in 1972 observed that "the modern man must re-establish the unbroken link with nature and wildlife. He must again learn to invoke the energy of the growing things and to recognise as did the ancients in India, centuries ago, that one can take from the earth and atmosphere only so much as one puts back into them". She*2 further said "For countless centuries, our country has been the home of a magnificent array of wild creatures. Our ancestors had learned to live with them in mutual respect. We

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* Deputy Director & National Project Coordinator, UNESCO/UNFPA Assisted Project on Population Education, Directorate of Adult Education, Dept. of Education, Ministry of Human Resource Development, New Delhi.
(The paper has been written in personal capacity)

*1 Gandhi, Indira, Key note address at the International Conference on Human Environment, Stockholm, 1972.

*2 Gandhi Indira - Message for the Wildlife Week, Environment News-India, - Volume I No.2 October, 1984.

hold this great heritage in trust for future generations . Let us prove worthy of it " . Thus the people who matter are perturbed seriously and feel that unless drastic remedial steps are taken in time.Continued tremendous damage to soil, to forest and to the whole biosphere which is the sole life-support system, cannot be prevented. But we are still hopeful that due to the realisation of these problems by the mankind the future is not so bleak as Ignancy Sachs*3 has remarked "by devising sound and comprehensive development strategies based on understanding the complex interrelationship between population, resources and environment, our planet can be transformed into a garden".

Physical, Social, Economic and Cultural Characteristics of India Relating to the Development of Environmental Education

Physical

India is the seventh largest country in the world. It is well marked off from the rest of Asia by mountains and the sea, which give the country a distinct geographical entity. The mainland comprises four well defined regions, namely the great mountain zone, plains of the Ganga and the Indus, the desert region and the Southern Peninsular. The Himalaya comprise three almost parallel ranges interspersed with large plateaus and valleys some of which are fertile, extensive and of great scenic beauty. Some of the highest peak in the world are found in these ranges. Plains of the Ganga and the Indus, about 2,400 km long and 240 to 320 km broad, are formed by the basins of three distinct river systems - the Indus, the Ganga and the Brahmaputra. They are one of the world's greatest stretches of flat alluvium and also one of the most densely populated area on earth*4. The desert region can be divided into two parts - the large desert and the small desert . Due to absence of surface water and very scanty rainfall the region is almost absolutely sterile. The Peninsular Plateau is marked off from the plains of the Ganga and the Indus by a mass mountain and hill ranges from 460 to 1,200 meters in height. Geologically also the country is broadly divided into three regions: the Himalayas and their associated groups of mountains, the Indo-Gangetic plain and the Peninsular Shield. The rivers of India may be classified as (1) Himalayan rivers (ii) Peninsular rivers (iii) Coastal rivers and (iv) rivers of the Inland drainage basin. The Ganga basin which is a part of the larger Ganga-Brahmaputra-Meghana basin is the largest in India receiving waters from an area which comprises about one-quarter of the total area of the country. Rainfall is

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*3 Ignancy Sachs - Wasteland or garden planet, Journal of the United Nations Fund for Population Activities, - Volume 9 No.3-1982 Page 11.

*4 Land & the people - India - A Reference Annual 1984 - Research and reference Division, Ministry of I&B Page 2.

erratic and ill-distributed. It varies from place to place and year to year. The heaviest rainfall is 11,419 mm of annual rainfall and the lowest is the 100 mm. There are four seasons (i) Winter (ii) summer (iii) rainy seasons (iv) Post-monsoon period (Oct.-Dec.).

India with its wide range of climatic conditions - from the torried to the arctic - has a rich and varied vegetation. The number of species of flowering plants in the country is about 15,000. There are about 35,000 non-flowering plants in the country. Owing to the destruction of forests for agricultural, industrial and urban development, several Indian plants are facing extinction. Possessing a tremendous diversity of climate and physical conditions, India has a great variety of fauna. There are about 350 species of mammals and 1200 species of birds in the country. More than 30,000 different species of insects, apart from a great variety is very rich and colourful.

Social, Economic and Cultural Aspects

According to the 1981 census the total population of India was 685 million. As compared to th 1971 census, it showed an increase of 25 percent. This population is about 15 percent of the total world population with only 2.4% of the total land area. Moreover, population growth rate has been increasing very rapidly. There was a four fold increase in the population growth rate in the first seven decades of the country: rising from 0.56 percent in 1901-1911 to 2.20 percent in 1961-1971. However the population growth rate in 1971-1981 was almost the same as in the previous decade. Regarding urbanisation during the 40's there was a notable increase and the urban population reached a level of 17.3 percent in 1951. Since 1961, there has been a continuous upward trend and the urban population increased to 19.9 percent in 1971 and 23.3 in 1981. India has some of the world's largest cities. There are 218 cities with population above 100,000 and nearly 60 percent of the urban population lives in these cities. Moreover , 26.7 percent of urban population lives in 12 big cities having population of more than 1 million having problems of environmental pollution . Rural to urban migration is the most important factor for the rapid growth of urban metropolitan areas.

Of the total population , nearly 64 percent of the people are still illiterate and out of these, nearly half the males and three - fourth of the females are illiterate. Literacy rate as per 1981 census is 36.23% only. A number of languages and dialects are spoken in India. Of these 15 languages have been specified in the eighth schedule of the constitution.

The traditional Indian Social structure is characterised by Caste endogamy which has certain segmental divisions . Each one of these segmental divisions is embarked by a specific role in the total system including its surrounding environment. But due to industrialisation and advent of technological innovations, the

traditional social structure is undergoing a process of change. Though protection of the environment has been an important aspect of Hindu way of life and worship of nature was a high priority in its culture, but the modern emphasis on progress and development has affected the value system and faith in our ancient culture-causing a conflict between man and nature. 20th century so called advancement has affected the social and cultural life of the country in relation to environment. But our father of nation 'Mahatama Gandhi' had emphasised love toward nature, creatures and humanity and even now many persons belonging to different sects preach the same.

India has completed her six five year plans and a remarkable progress has been made particularly in economic growth, food grains production, resource mobilisation and generation of employment and the Gross Domestic Product has increased by 200% while the increase in per capita income has been in the order of 53%. Thus since independence, India has travelled along distance on the road to economic progress and poverty reduction has been the goal but still , around 50% of the entire population live below poverty line (a monthly per capita expenditure of Rs.76 in rural areas and Rs.88 in urban areas). India is still predominantly rural and agriculture is the base of the economy but the progress of industrialisation over the last thirty years has been a striking feature of Indian economic development.

Thus with the advent of industrialisation and urbanisation, the consequences in terms of environmental deterioration have been quite significant. Tripathi*5 and others after reviewing the situation in historical perspective have concluded that "For rapid industrialisation, developmental plans were based on exploitation of natural resources ....."Currently the nation's air, water and land is not only over-used but is also degraded.."

Major Environmental Problems of the Country , Their Causes and Steps Taken For Solution and Prevention

A British writer and a good friend of India once talking to Mahatama Ghandi, the father of the nation, remarked that wild life was fast disappearing and in answer Mahatama said "It is decreasing in the jungle but it is increasing in the towns".

Environmental problems of India as per document of the Planning Commission*6 can be classified into two broad categories :

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*5 Dwivedi, O.P, Tiwari B.N. & Tripathi, R.N.-Hindu concept of Ecology and the Environmental crises' published in IJPA Vol-XXX No.1 Jan-March 1984 PP-33-67.

*6 Planning Commission, Govt.of India, Sixth Five Year Plan 1980-85 Chapter on Environment, page - 343

(a) Those arising from conditions of poverty and under-development

(b) Those arising as negative effects of the very process of development

Our late Prime Minister Mrs. Indira Gandhi*7 while addressing the plenary session on UN Conference on Human Environment at Stockholm 1972 has very amply explained the conditions of poverty and its relationship with environmental problems and accordingly "Are not poverty and need the greatest polluters? For instance, unless we are in a position to provide employment and purchasing power for the daily necessities of the tribal people and those who live in or around our jungles, we cannot prevent them from combining the forest for food and livelihood, from poaching and from despoiling the vegetation. When they themselves feel deprived, how can we urge the preservation of animals? How can we speak to those who live in villages and in slums about keeping the oceans, the rivers and the air clean when their own lives are contaminated at the source". The second category of problems are those which have come up as negative unintended side effects of the rapid economic growth and development. Pal*8 has described some problems and accordingly "Industrialisation, human settlement in coastal regions, transportation of oil at sea, petro-chemical and allied industrial complexes near major ports, use of pesticides in agricultures, power generation and coastal power stations, reclamation of coastal land, exploitation of living and non-living marine resources, all effect the quality of the environment to varying degrees". Thus overexploitation of the vegetative resources in the Catchment areas of river/valley projects, deforestation and soil erosion both leading to siltation of their reservoirs and increasing frequency and ferocity of floods are the more outstanding of the consequences of the increasing pressure on limited environmental resources. The problem of sanitation are not confined only to the urban slums but exist in rural areas as well. This gives rise to various kinds of diseases. Besides, there are problems of air and water pollution in some highly industrialised cities. Moreover, recently Minister of States*9 for Environment and Forest while addressing a conference in Bangkok further asserted

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*7 Man and Environment - Indira Gandhi on Environment, Dept. of Environment, Govt. of India, 1984 page - 23.

*8 Pal, B.P. A National Policy on Environment, Dept. of Environment.

*9 Sen Vir, Speech of the Miniter of State for Environment Forests Goverment of India, New Delhi ESCAP Ministerial level Conference on Environment in Asia, Feb.11-12, 1985 Bangkok, Thailand, Page 4.

that "another class of environmental problems arises as unintended side effects of the very attempts at development. These emanate from the mismanagement of natural resources, the unplanned discharge of residues and wastes, the handling of Toxic chemicals, indiscriminate construction and expansion of settlement activity etc". He referred the unfortunate tragedy of Bhopal gas - leakage in which many lost their lives and led to an unprecedented environmental disaster and left an indeliable imprint on the vegetation and soil biota of the area. The Planning Commission*10 Government of India has identified the following major environmental problems of the country.

Natural Resources and the Environment

a) Land and Water

According to an estimate made by the Ministry of Agriculture as much as 175 million hectares (mh) out of the country's total land area of 304 mh are subject to environmental problems.

b) Soil

According to an estimate India was loosing about 6000 million tonnes of top soil per annum through water erosion. The total area to periodic floods which was estimated at 20 million hectares in 1971 stands (1981) at the level of 40 million hectares - an increase of 100 percent in 10 years.

c) Forests

75 million hectares classed as forest lands, less than half is actually under tree over and as much as 20 million hectares of forest land is estimated to be affected by erosion.

Other Natural Living Resources

In India, five species of mammals and birds are known to have become extinct in the recent past and many other species of flora and fauna are threatned, endangered or extinct. Tropical rain forests are considered to contain more species, but most of these have already been lost or are grossly disrupted in the western ghats while in the north-eastern region they have been extensively destroyed through a faster cycle of shifting cultivation.

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* Planning Commission - Sixth Five Year Plan (1980-85). Chapter on Environment PP 343-351.

Marine Eco-systems

Absence of protection measures has led to wanton exploitation and destruction of these resources.

Environmental Pollution

Water Pollution

There is sufficient evidence of the adverse effects of water pollution from all over the country and most of the rivers are getting the discharge of community wastes from human settlements. Most of the community and industrial waste water go straight into water courses rendering them unfit for most uses, least of all as drinking water sources.

Air Pollution

Problems of air pollution are becoming severe in major cities like Calcutta, Bombay and Delhi etc. studies have established the adverse impact of industrial and transportation emissions on crop productivity and as on health of human beings.

Noise

Noise in our major cities and towns is growing menace due to traffic. Occupational environment and community noise.

Human Settlement and the Environment

As mentioned earlier urbanisation has been rapid and there are 12 cities of million plus population and more than 206 cities of population between one lakh and 10 lakh in the country. The unplanned and unregulated growth of human settlements is leading to the springing up to large slums leading to environmental degradation, depletion of resources, breaking down of services and accentuation of the problem of urban renewal and environmental pollution.

In rural areas the environmental problems are largely due to overuse or misuse of natural resources mostly because of sheer poverty and lack of alternatives. The denundation of vegitative cover due to indiscriminate collection of fire wood and the overgrazing by cattle and other livestock and consequent soil erosion are two common examples of the improverishment of environmental resources.

These are mainly the environmental problems arising basically from the conditions of poverty, underdevelopment and from the unintended negative effects of the very process of development. The country is already alive with these problems

and very significant steps have been taken for their solution and prevention.

Steps Taken for Solution and Prevention

In our national planning , environmental factors in development have been given due weightage and a separate chapter on environment in the Sixth Plan was provided. In November, 1980 a separate Dept. of Environment was constituted and recently the Department has been elevated to the status of a Ministry of Environment and Forests under the stewardship of our present Prime Minister. Regarding the steps taken, Minister*11 of State for Environment and Forest has referred two recently announced major programmes for pollution control and resources conservation. One is for setting up a Central Ganga Authority for Speedy Implementation of the pollution control in holy Ganga river which includes:

- renovation of the existing sewage pumping and treatment plants
- renovation of the existing severage system
- Installation of new sewage treatment plants in 27 major cities to treat sewage and to recover resources such as bio-gas and manure besides provision for irrigation and acquaculture. The project, it is expected, will be a major land mark of integrated pollution control. The 2nd major operational programme is constituting a central wastelands Board that will afforest 5 million hectares of wasteland each year

The steps so far taken for solution and prevention of the problems are as per annual report*12

- Pollution Control and Monitoring,
- Environmental Impact Assessment
- Living Natural Resources Conservation
- Eco-development
- Environmental Research Promotion

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*11 Sen Vir - Speech on the occasion of ESCAP Ministerial level Conference on Environment in Asia Feb.11-12, 1985 Bangkok, Thailand page 6.

*12 Annual Report 1984-85, Ministry of Environment and Forests, Dept. of Environment, Govt. of India.

- Environmental Information

- Environmental Education, Training and Awareness

- Environmental Policy and Law

According to the policy on environment, the objectives will be the following:

- Institutionalising the process of conservation oriented development activities among agencies at the Central state and local levels with various sectorial/programme jurisdictions

- Securing greater public participation in Environmental management

- Laying a sound S and T base and build up an integrated system for environmental research, development, demonstration and extension activities

- Strengthening mechanism for ensuring corrective action with regard to environmental degradation that has already taken place

The Working Group*14 set up by the Planning Commission for the Seventh Five Year Plan of the Department of Environment, Govt. of India has concluded that environmental management cannot be treated as a compartmentalised activity of a single agency working in isolation from various sectors of economic development. All agencies of Government must incorporate environmental management considerations in their respective sectoral development plans and programme and thus environmental factors are being taken into consideration by all agencies and organisations. A momentum for awareness and education is being created and accordingly promotion of environmental education, training and awareness at various levels is an essential pre-requisite for Environmental management. Moreover according to the report of the Steering Groups*14 "the basic approach to the Seventh Plan would thus be sustainable development in harmony with the environment . Towards this end , it would have to be ensured that all future development programmes in all sectors , will take environmental considerations fully into account .

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*13 Report of the Working Group set up by the Planning Comission for the Seventh Five Year Plan of the Dept., of Environment, Dept. of Environment, Govt. of India, 1985.

*14 Report of the Steering Group on Science and Technology and Environment for the Seventh Five Year Plan (1985-90) Planning Comission Govt. of India, Sept. 1984.

Current Non-Formal Environmental Education Programmes, Approaches , Results Obtained and Problems Encountered

Anil Bordia*15 an Indian famous educationist has elaborately discussed the system of incidental and non-formal system of education and according to him "Education is that which awakens" and therefore accordingly "it is necessary to knit from the very outset certain nationally cherished goal into the whole fabric of the learning system". Among the goals - environmental conservation and enrichment is one of the important one's. Our Late Prime Minister Mrs.Ghandi has again and again emphasised the need of Environmental Education in the Educational system and in her words "I don't suggest that we should develop newly structural courses and curricula but that we should introduce a new orientation to learning processes and attitudes. For example, an awareness of the environment and the need for conserving basic life support system like soil, water, flora and fauna, and the need for population stabilisation, and family planning etc., should grow naturally into the student from the young age. Since opinions are usually formed in the formative years of the one's life, teaching aids, methods and open-door field visits should be so structured that living in harmony with the environment becomes a habit with each young individual ". Thus as a national policy through non-formal education system of learning, environmental components have been interwoven in the curriculum and materials and in instructional methodology and technology. Some of the major objectives*16 of non-formal environmental education are:

1) To recognise the inter-dependence among materials in the physical environment of plant and animal life; for survival growth and development

2) To identify human-material space and time resources in the environment

3) To make effective use of environmental resources for social economic and cultural survival and sustained development

4) To understand that many diseases may be prevented by efforts leading to village/community cleanliness environmental sanitation, removal and prevention of pollution etc.

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*15 Anil Bordia , the Version of learning society - Zakir Hussein Memorial Lecture - Coimbators, Nov.6,1978 ,pg. 2-4

*16 Non- Formal Education Sub-Regional Workshop on Teacher Training in Environmental Education , March 3-16 , 1983 Report NCERT , 1983 , pg. 120

5) To recognise simple physical, biological, chemical principles and laws and cause and effect relationship with reference to real life situations and use these to explain changes in the environment

Late Dr. Ramanathan of the Dept. of Environment while discussing the linkage between environment education and adult education suggested that following goals of environment education.

1) Providing an understanding of the immediate and long term environmental issues;

2) Introduction to ecological systems, their inherent Interdependence and the broad concept of ecological balance in nature;

3) Creating a sensitivity to the environmental components both physical (land, air, water) and biological (flora and fauna) as life support system and the impact of men's activity on these;

4) Promoting actions which protect and conserve environmental quality and which are consistent with optimal use of resources;

5) Instilling a respect and affection for all elements of the environment;

6) Encouraging practices that will sustain development rather than destroy and

7) Offering scope for both casual and non-formal information transfer and formal and specialised training;

Thus the overall objective of non-formal environmental education programme in India is to create awareness and knowledge for the causes of environmental deterioration, change attitudes of the target groups and impart skills to them for preserving the environment and encourage public participation in conservation programmes.

One of the most important schemes of non-formal education is non-formal education programme for the age group 6-14 for those children who are "drop-outs" or "push-outs" from educational institutions due to lack of motivation, poverty the economic necessity for children to augment their family income, irrelevance and inflexibilities of the prevailing content and form of education, and social and cultural prejudices. The non-formal education programme for this group has, therefore, the main objective of offering educational opportunity for children who are out of school in a form, manner and at time suitable to their needs. The strategy includes part-time instruction, with possibility of multiple entry, remedial programme for drop-outs,

meaningful organisation of curricula related to their environment, a strong element of work experience, and community education to create public opinion in favour of education.

The NCERT under the over-all control of the Ministry of Education is responsible for this programme in the country and has taken concrete steps for incorporating environmental factors and components in the text book and other instructional material. A system approach has been adopted for incorporating in the curriculum and text books contents which help in knowing about environment. Efforts have been made to ensure that the materials and text books do not contain anything which are prejudicial to promotion of a sense of harmony with nature specially relating to environmental protection, wild life preservation and social forestry etc. NCERT is also engaged in developing textual materials for non-formal education centres which are based on the physical and social environment of the specific communities. This has substantially contributed in making instructional programmes more relevant and meaningful. Moreover, NCERT in collaboration with state level institutions as SCERTs, SIEs etc. has been organising orientation training for teacher educators and resource persons.

It is worthwhile to mention some relevant projects completed by NCERT in this regard and there are UNICEP assisted projects like primary education, curriculum renewal, developmental activities in community education and participation, comprehensive access to primary education, nutrition health education and environmental sanitation at primary stage which have kept in view the environment and its problems.

In order to provide education to the out-of-school children in the age group 9-14, NCERT has developed a curriculum highlighting the environmental problems and practices. Grow more trees, animal husbandary, eradication of superstitions relating to environment and personal hygiene are some of the topics included in the Teachers Guide and the primers for the rural, tribal and urban children.

In India, the liquidation of illiteracy is a very major programme of non-formal education and has great significance and and priority. In brief, this programme is designed with the following vital elements*17 :

i) The curriculum is related to the Environment and to social and cultural and economic needs of each learner group; it should lead them to a better awareness and understanding, knowledge and ability, and finally to action, which means that the curriculum should be richly diversified.

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* Non-formal Education - Directions and responsibilities Directorate of Non-formal (Adult) Education , Ministry of Education , Govt. of India , New Delhi . pg 11 (undated)

ii) Since the learners are already participants in several community work and civic situations, and shoulder family responsibilities, and have reached a certain level of experience and maturity, the content of the programme should be appropriately designed to strengthen what they possess and provide what they do not. The curriculum is therefore, envisaged as a composite 'mix' of knowledge, understanding, information, literacy and vocational skills, behavioural and attitudinal changes, social, economic and scientific explanation and finally directions for actions.

iii) It is important to mobilise human and material resources in the community, since no single individual or agency can be so omniscient as to organise such a composite programme, and also the learning has to be related to living and working.

The main programmes under this sector are:

i) Non-formal adult education programme for young men and women in the age group of 15-35 (Adult Education)

ii) Non-formal education programme for urban workers (Polyvalent education)

iii) Other non-formal education programmes by non-educational agencies like mass media, and non-formal continuing education through universities and libraries for reinforcing non-formal education

A National Adult Education Programme (NAEP) was launched on mass scale in 1978 with components of literacy, functionality and awareness and under the awareness component the environmental issues and programmes have been given due weightage. The curriculum prepared for NAEP*18 includes contents of healthy environment, hazards of the existing environment like disposal of human excreta, open and overflowing drainage, ecological hazards and pollution - air pollution, water pollution, soil pollution and improvements of environmental conditions. Thus this programme from the very inspection had the objective of helping individuals to be aware of the physical environment, its beauty as well as its drawbacks and mysteries, with a view to make adults aware of the relative importance of hygienic and sanitary living conditions, pure drinking water, pure air, plant life and its importance for healthy living. These contents have very scientifically and systematically reflected in the teaching-learning materials prepared for the use of adult education functionaries and learners at the centres in villages and cities. In other words the learning materials corresponded largely to the conditions and needs of the physical, social cultural human and natural environment (ecological approach). The present programme of Adult Education is also based almost on the NAEP pattern and the environmental education contents are reflected in (i) Basic

Literacy package (ii) Post-literacy and follow-up materials (iii) Training materials and (iv) other motivational and supplementary materials. The content areas of Environmental aspects integrated so far in these materials are:-

- Environmental sanitation/cleanliness
- Protection and plantation of trees for ecological balance
- Environmental conservation/enrichment
- Environmental and social pollution

More the National Resource Centre i.e. Directorate of Adult Education, Ministry of Education, New Delhi in the year 1982 organised a workshop*18 on Environmental education so that guidelines are finalised for the writers who write for neo-literates and messages on environmental education are included in the basic literacy, post literacy, follow-up and training materials.

Recently DAE has taken up the preparatory project on population education in which also 12 State Resource Centres for Adult Education are preparing teaching-learning materials for environmental education also both for learners and filed functionaries. Thus environmental education has inter-alia formed an integral part of awareness component of Adult Education Programme and is interwoven with various aspects of the programme at all stages.

Programmes based on Polyvalent (multi-faced) approach have been developed in India through establishment of a network of Shramik Vidyapeeths (Polyvalent education centres). The programme represents adult education of workers in urban and industrial areas, tailored to match the educational needs of homogenous groups of workers-illiterate semi-literate or literate, skilled, semi-skilled or unskilled, men and women in organised and unorganised sectors. The programmes of these centres are directly related to the functional needs of workers and take into account his learning requirements related to the environment of work, home and community. In order to contribute to the development of over all "personality" of the participants, contents unit which deal with both cultural and civic education are given-aimed at helping the participants to arrive at a deeper understanding of the characteristics of, and the problems facing their immediate environment. As mentioned earlier these living in slums with problems of environmental degradation and therefore receive non-formal environmental education through this programme. At present 35 polyvalent education centres are in operation in major urban and industrial centres of the country.

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*18 Workshop on Environmental Education in Adult Education Programme (June 25 - 28 , 1982). Directorate of Adult Education , Ministry of Education , New Delhi .

As mentioned earlier , mass media i.e. radio , television, newspapers etc. are important vehicles of non-formal education. In India, mass media has helped a great deal in highlighting the threats of human life and cultural properties from such projects as the Mathura Oil Refinary or the Silent Valley Project in Kerala. The Chipko movement in Garhwal and its spread in other regions of the country was given a big boost by mass media-documentaries, TV programmes, radio interviews and coverages and press release etc.

The Dept. of Environment is encouraging projects on use of mass media, both traditional (folk) and modern (Electronic) for communication of environmental messages through out the country and radio, television, traditional art, socio-cultural and religious festivals are key tools for propagating such awareness activities. According to the Annual Report*19 in its efforts to propagate the message of Environmental Conservation the NMNH made use of the medium of dance-drama for the first time. It organised a special dance-drama performance titled 'Parashakti'. It attempted to depict the principles of universal energy and tried to show how the beauty of cosmos has been turned into ugliness and destruction. It was an indictment of what man was doing to man and his inhumanity towards nature and his fellow beings. The dance-drama was well received. A puppet show has also been developed to present stories relevant to environmental education through the existing medium. The magazine 'Target' is to bring out environmental based stories in the form of comics.

Thus mass media of communication is being utilised for the spread of environmental education messages to the general public and specialised audiences and there is a deliberate attempt by different media of communication i.e. Newspaper, periodicals, radio, television and film to project the environmental concern. The statement is further strengthened by the findings of a study conducted by the environmental services group in New Delhi (Environment in the Indian Mass media) and accordingly (udring a period of 9 months) various newspapers space coverage varied between 0.37% to O..87% of the total space of the newspaper. The periodicals also carried good number of items. In All India Radio's 'spot-light' programme during a period of one year environment featured 23 times and Delhi TV produced around 27 programmes on environment during the same period varying between two minutes to 60 minutes. Films Division released 17 films in only one year (study period) relating to environment.

Though a lot of effort is being made but still tremendous reach of the media agencies has yet to be harnessed for environmental communication and education purpose.

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*19 Annual Report 1984-1985 - Ministry of Environment and Forest , Dept. of Environment , Govt. of India . pg 94

The university Dept. of Adult Continuing Education and Extension and some libraries have published some literature on environment concern and arranged extension lectures and in some cases organised camps and launched cleanliness drives though NSS and thus created awareness on environmental issues.

As is evident from the above mentioned programmes environmental education is one of the components in the on-going programmes of non-formal education but during the recent decads it got a new impetus and integration and infusion approach is being adopted to a more systematic way.

The programmes as mentioned earlier are learner-based after taking into account their problems for suggesting possible solutions. The learning materials are built around the problems of the learners and incorporated possible solutions through educational means. The approach followed was to consider environmental education as an important intervention in the total development of the man in harmony with the physical, social and economic aspect of environment. The pre-operational surveys and socio-economic exploratory studies are carried out to determine the content of the teaching-learning materials. Thus problem-centred and solution-oriented approach is being adopted. As environmental problems vary from region to region, the contents of the programmes of environmental education are local-specific after taking into consideration the cultural, social and religious practices in relation to environment. Moreover, the programmes enable the learners to have a role in planning these learning experience and provide an opportunity for making decisions and accepting their consequences. These programmes help the learners discover the symptoms and real causes of environmental problems and relate them with their own situations.

As a result of the efforts made through short-term courses, workshops and such other non-formal education campaigns and methods of integration and infusion in adult mass media, very big segments of the society have been exposed to the problems of environmental degradation and conservation. People's opinion have started changing and consciousness created with better response and there is already a grounds well of opinion against the pollution. Moreover the experiments made on eco-development camps for the regeneration of environmentally degraded areas and also for generating public participation in the solution of environmental problems and broadening general environmental awareness specially through students has been rewarding.

Until recently environmental education was not a regular part of the curriculum of the educational programmes and only some components of environmental education were included in rudimentary and isolated form in the contents of the teaching-learning materials and therefore, it is difficult to get adequate supplementary and reference materials.The instructors so far have not been oriented in environmental education concepts and therefore are unable to plan activities properly. Lack of trained man-power for developing materials for non-formal

environmental education programmes specially to be used at villages levels and slums in urban areas and through mass media is a big handicap. There is no national source book on non-formal environmental education in the country which could be referred as source material by trainers, programmers and implementers, curriculum developers and material specialists. There is dearth of instructional and teaching-materials particularly audio-visual materials and teaching aids.

Future Plans, Priorities, Ways and Means For The Implementation And Development of Non-formal Environmental Education

Government of India attaches great importance to Environmental education with special reference to non-formal Environmental Education and Dept. of Environment, Government of India has initiated several activities addressed to specific target groups such as decision-makers, planners, administrators, executives, students and people in general by organising seminars, workshops, refresher courses, group discussion, popular lecture, multi-media campaigns, posters, essay competitions etc. The National Museum of Natural History (NMNH) organises a number of educational programmes and expanded its facilities for non-formal education in natural History with particular emphasis on environmental aspects.

According to the Report*20 during VIIth Five Year Plan (1985-1990) under non-formal environmental education publication of books, pamphlets, posters, preparation of audio-visual aids, organisation of temporary exhibition etc. will be taken up. Training programmes for creating awareness in respect of various target groups as decision-makers, Senior executives, legislators, social workers, housewives , journalists , lawyers and other professionals will be organised . Existing institutions and organisations will be utilised in the creation of public awareness on Environmental issues and Environmental Education cells will be set up in these organisations. The functions of these cells would be:

- To act as resource centres for providing the requisite data and to help organisations that are engaged in the production of material on Environmental Education.

- To conduct awareness programmes in their areas of specialisation through popular lectures, exhibitions audio-visual presentations, seminars, workshops etc.

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*20 Report of the Working Group set up by the Planning Commission for the 7th Five Year Plan of the Dept. of Environment, pg 58

There is a proposal*21 to establish a center for excellence in environmental education as well as strengthening the rural extension services . Specifically the center will

- Prepare basic educational reference materials
- Develop environmental education and awareness programmes
- Provide services to other environmental education agencies
- Devise field test programmes
- Develop interpretive centres/Parya Varan Kendras in sancturaties
- Train people in carrying out the programmes and in using the material
- Initiate and propagate the programmes
- Develop a reference library and a data centre
- Public a Quarterly Journal for general environmental education for professionals and others in the field

The basic thrust of the non-formal environmental education would encompass the incorporation of environmental items in education curricula and teaching aids/materials. The Govt. will encourage non-governmental organisations, mass media and concerned organisations to promote non-formal environmental education. According to the working group report*20 for VII th Five Year Plan a series of documentary films is proposed on watershed management, soil conservation, water resources conservation, afforestation of degraded areas, cleaning of water bodies, reclamation of mined areas etc . The documentary films will depict successful techniques and methodologies adopted in tackling various situations and will be used for training as well as for creating awareness. Thus the Government will support the production and dissemination of popular environmental education materials and audio-visual aids.

Recently a decision has been taken to establish linkage between non-formal Adult Education, Adult Literacy programmes including women's literacy and environmental factors and action has been contemplated in the following manner:

i) Material produced by National Resource Centres and State Resource Centres for Adult Education will include the areas of environmental education

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*21 Report of the Steering Group on Science and Technology and Environment for the 7th Five Year Plan (1985-1990)-Planning Commission , Govt. of India, Sept. 1984.

ii) Topics on nursery raising and plantation will be included in all types of teaching/learning materials viz., basic literacy, supplementary and post-literacy

iii) Topics on nursery raising and plantation will be included in the training materials for field functionaries

iv) Topic on nursery raising and plantation will be included in the curriculum for basic literacy, post literacy and follow-up stages

Directorate of Adult Education, Govt. of India with the financial and technical assistance of UNFPA/UNESCO*22 has taken up the National Project of Population Education in Adult Education/Literacy programme and the curriculum prepared for the purpose to include the above mentioned content areas under the broad heading*23 impact of popultion growth on Resources Development and thus Environmental education aspects in the on-going programmes and future programmes will be fully linked up. By operationalising these activities and programmes, in the age group of 15-35 by 1990 as many as 87.5 million*24 illiterate adults will receive the messages on Environmental Conservation and education

The experiments of eco-development camps with the objective of restoring of already degraded ecosystems through practical field schemes, will further extended and eco-development camps for sensiting youth on the importance of conservation, specially through the technique of learning by doing is proposed to be intensified further during the 7th Five Year Plan period.

Conclusion

In India , the challenges posed by rapidly changing scene of natural and social environment due to unprecedented technological advances, economic and population growth, is being taken up seriously and environmental awareness and education have been accepted as an educational intervention to cope with the problem of environmental deterioration. Various kinds of strategies have been adopted and programmes organised to help the cause of

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*22 Population Education in Adult Education Programme- Preparatory Project (IND/84/P039) and Integration of Education into Adult Literacy Programme (IND/86/P30) - UNESCO/UNFPA project,DAE, New Delhi.

*23 Draft Curriculum on Population Education for Adult Education Programme, Directorate of Adult Education , Ministry of Education , New Delhi , December,1984

*24 Report of the Working Group- Adult Education in the VIIth Five Year Plan (1985-1990), 1964

environmental education . Mainly the infusion and integration approach has been adopted in non-formal adult education programme including environmental education concepts at different stages. The learning materials are based on problem centred and solution oriented approach and are local specific after taking into consideration the social, religious and cultural practices.

In order to reinforce the country's efforts on environmental education, it has been realised that there is an urgent need for the establishment of a centre of excellence on environmental education. This centre,it is proposed, will develop and initiate educational programmes and materials train users of functions as a link among the various agencies and individuals concerned with environmental education and generally get involved in spreading environmental awareness. Moreover, it is the policy of the government to provide assistance to professional societies and appropriate institutions to develop programmes and activities in the area of environmental education.

To conclude it is worthwhile to quote the approach paper prepared for VIIth Year Plan and accordingly "the basic approach to VIIth plan would thus be sustainable development in harmony with the environment. Towards this end, it would have to be ensured that all future development programmes, in all sectors, will take environmental considerations fully into account". Indeed, environment is all-pervasive and the success of our efforts in this area will ultimately call for the involvement of the entire population at all levels. In this task of creating and intensifying environmental awareness and education at all levels of Indian society both formal and non-formal educational channels will be fully utilised.

NON-FORMAL ENVIRONMENTAL EDUCATION IN INDONESIA

By H . M . Soeharto

Introduction

Indonesia proclaimed its independence on August the seventeenth 1945, since then it has found freedom from the rule of Dutch as a colony . Indonesia had been ruled by the Dutch for almost 350 years, therefore it is always reminded of the difficulties caused by the rule. Consequently , Indonesia wants to invite the world to eredicate any form of colonialism throughout the world, because it does not express the just and civilised humanity and social justice.

Since then Indonesia begins to fulfill the freedom by fighting against poverty , improving the standard of living and making contact with other countries in the world especially among the neighbouring countries which are associated in Asean , through the free and active political approach , mutual respect , provide aids for industry and economy , social, culture and even for defence.

Given the opportunity as a country which is governed by itself , and with the notion of building a complete nation , all internal and external affairs are based on the nation philosophy i.e. Pancasila (five principles) and on the 1945 Constitution , therefore Indonesia has planned development programme every five year which is called PELITA, an acronym from PEmbangunan LIma TAhun . Thus through five-year plannings the development for areas are conducted by government, community and families.

The success of development depends on implementation therefore we have to be prepared to take care of the negative results caused by it , since there will be influential relations between present and future development including the environmental interaction. Development which has the general sense and objectives needs serious and comprehensive planning . As we know the purpose of development is achieving growth however we have to consider the negative aspects of development because they affect the environment . The objectives of development must be based on economic or non-economic reasons . Therefore , we should not aim for physical development only , it must also be ecologically-sound .

Setting up the industry which provide work to the population is not a complete solution for the modern technology since it does not assure the people's well-being and it may create problems which are difficult to solve.

Background

Indonesia , one of the ASEAN countries , is a democratic parliamentary republic based on the philosophy of Pancasila and 1945 constitution. The symbol for the country is the Garuda which means "Unity in Diversity". There are various ethnic religious , languages and cultural groups in Indonesia but all of them are in unity:

Having one native country that is Indonesia
Belonging to one nation that is Indonesian Nation
To have one language that is Indonesian Language

which is pledged at the All Indonesia's Youth Congress on the 28th October, 1928.

The area of the Republic of Indonesia is about 9,000,000 square kilometres , the area of the sea is about 7,000,000 square kilometres while the land is about 2,000,000 square kilometres. Indonesia is the largest archipelago in the world. It consists of many islands and the size of the main ones are:

- Java and Madura which are about 132,187 sq. kilometres
- Sumatra which is about 473,606 sq. kilometres
- Kalimantan which is about 539,460 sq. kilometres
- Celebes which is about 189,216 sq. kilometres
- Bali which is about 5,561 sq. kilometres
- Irian Jaya which is about 422,981 sq. kilometres

The land area of the Republic of Indonesia is about 735,000 square miles while the sea is about 4 times larger. The whole territory extends to about 3,200 miles from east to west which is 95 to 141 east longitude. From north to south it covers an area of 6 to 11 south latitude, and it extends to about 1,180 miles.

According to population growth projection in 1983, there are about 150,900,800 people which consists of 370 ethnic groups, 167 languages and various different social and cultural groups . The last 4 census 1930, 1961, 1971 and 1980 recorded more then 60% of the population are on Java island . Population growth in Indonesia is still increasing from time to time. With regards to

the census , in 1930 shows an increase of 1.0%
1961 shows an increase of 2.1%
1971 shows an increase of 2.3%

The 1985 data and information show the future population.

The Indonesian government system is decentralization and is divided into administrative territories as follows:

27 provinces governed by 27 governors
243 districts governed by 243 heads of district
54 municipals governed by 54 mayors
33 administrative towns governed by 33 mayors
3,341 sub districts governed by 3,341 heads of sub district
57,850 villages governed by 57,850 heads of village.

State government is in Jakarta which is the capital of Indonesia. It is governed by a president and vice-president who are responsible to the People's Consultative Assembly.

Several years ago Indonesia was famous in the world because of its products such as pepper, tobacco, clove, coffee, nutmeg, cocoa, quinine, sugar, capok, long nourishing bean, peanut, soybean etc . Besides these , Indonesia is also rich in oil , natural gas, aluminium , coal, copper, nickle, manganese, gold, silver etc.

Indonesia has had about 200 locations of reserved forests. They are more than 7,000,000 ha (15,066,724 acres) which is about 5% from Indonesia forest.

Protected fauna include animals such as commodore, gorilla, wild sheep, bird of paradise, tiger, elephant, rhinoceros and wild pig.

Indonesia is rich in many kinds of flora , too . There are 780 kinds of orchid and 1,600 kinds of fern. There are about 50 kinds of fauna which are protected by the government.

Indonesia has commenced with the Pelita IV after a successful Pelita III. The patterns of development in Indonesia is simultaneous . If there is national development , there will be regional development , locally . The local development must reflect the national development .

With the three five-year development plans that Indonesia had , the prosperity has been increasing. In 1973 the Indonesian PCI was $97 . If it is compared with other Asean countries , Indonesia seems to be at the lower prosperity. It is as follows:

- Thailand had US. $ 164.00
- The Phillipines had US. $ 208.00
- Malaysia had US. $ 345.00
- Singapore had US. $4,600.00

Nowadays , the economic development is made to reach all economic and industrial sectors in order to create the social justice for all Indonesian people eventhough they are living in rural areas . Indonesia is facing with educational challenge for the community which had no opportunity to go to school which now seems to decrease , as described below:

in 1970/1980	there were	17.3 million	illiterates
in 1980/1981	there were	16.8 million	illiterates
in 1981/1982	there were	15.7 million	illiterates
in 1982/1983	there were	14.7 million	illiterates
in 1983/1984	there were	13.9 million	illiterates
in 1984/1985	there were	12.3 million	illiterates.

Major Environmental Problems And Solution Measures

Major Environmental Problems

A large number of Indonesian population is centered on the Java island . Java is about 7.5% of the whole Indonesian land. The population is not evenly distributed to the whole country and this causes Java island to be heavily populated .

In addition , the youths who came from outside to study in Java refuse to go back to their hometown . As a result of this the population is not spread to the whole country and this situation will slow down the development of Indonesia.

Furthermore a lot of them are illiterates , and have no skill, except for their manpower. It is very difficult to train them because they cannot read and write. It is difficult to communicate with them because they cannot understand and speak Indonesian language . As the motto says: "...to get food or not, it is better to collect together. It will be pleasant". That is why parents need their children to help them instead of sending them to school . Children sell things in the market or work for their parents to cultivate the land.

Children always find it difficult to follow the government programmes which are given through mass media (radio , press or television) regarding rural development , health extension , information on law and trafic rules or protection and maintenance of the environment .

The farmers are always tricked by a bow net who lend them money with high interest . The workers are poorly treated , because there is no work agreement between them and the employer. They have to work for long hours for small payment . With the small payment they have to fulfill the needs of their big families . The situation become more difficult when the worker use gambling as a way to increase their income: They always lose.

As a result , the children have no proper clothings and meals.The food they eat is still far from being nutritious.

We can imagine in poor situation the children have no blankets or thick clothing to wear when the climate is cold, or children are starving and become afflicted with diseases . These can cause death among children . The death rate is very high . If they cultivate their land they mostly work by the traditional way. They refuse to accept the modern one . They refuse to fertilize the land by using fertilizers because they believe this can spoil the land.

The houses they live in are very unpleasant . Generally there are several families in one house . The house lacks proper ventilation and lavatory . They do not know how to build the latrine . Water from the houses floods the surrounding and this become the breeding grounds for mosquitos . Rearing cows or sheep is very important in rural areas . The people are proud to have many animals . If someone has many of these kinds of animals in his house he will be considered a rich person . The animals are kept in the house so that they can easily be seen by his visitors. Of course there will be foul odour in houses like these.

They do not know how to cook vegetable properly . They always cut them first and then wash them . So the vitamins in the vegetables are washed away . In addition they cook vegetable with huge fire that the heat destroys the vitamins.

They generally use water from ponds for household purposes i.e. washing vegetable , clothes , dishes or for drinking and bathing . The water is dirty yet they use it to fulfill their needs.

If they have enough money , they will spend it on expensive and wasteful ceremonies. They do not feel that buying clothes for their family is more important than wasting the money on these kinds of ceremonies .

Cutting down trees is very dangerous because there is no planning for this matter. They cut trees for firewood or building houses, but there is no replanting program . It is common to find the forests on fire , because people are not aware of the danger. They throw away burning cigarette butts anywhere in the forest and this can cause fire. As a matter of fact people find it difficult to get water during dry season but it can easily flood during rainy season . Cutting down trees for transmigrant area spoil the land as the mountains will not have enough trees.

Besides that , there are the marine animals which are caught by modern trawls and that is why there is not enough time for the fishes to mature.

Prevention And Solution Effort

As mentioned in the Guidelines of State policy , the government has to improve the quality of life of the people; consequently, the Indonesian government has provided educational facilities for everybody. It is hoped that the youths will continue their studies at the universities in their own states which have the same standard of education as the rest of the country.

The government takes up the responsibilities of developing programme to eradicate illiteracy throughout Indonesia . Therefore , Non-Formal education is established with its function to eradicate illiteracy through certain activities. Since 1965, the government and the people in new order have worked hard to implement a series of five-year plans aimed at raising the standard of living for all Indonesians . Since 1978 , which is also during the third five-year plan the government has been implementing the compulsory education law for children aged between seven to twelve , and a new programme to eradicate illiteracy called programme KEJAR. The cornerstone of the community education system is the programme Kejar Package A. The educational objectives of the Kejar Package A are as follows:

- to aid in developing the spirit of one nation with a common purpose under the national philosophy of Pancasila . Package A presents a view of village life that incorporates the improvements that the national development program is trying to achieved . In this way Package A helps to build in the minds of learners a vision of the goals of the development process.

- to teach the national language to those who do not know it and also to improve the language skills of those who have a poor command .

- to teach reading and writing.

- to teach simple mathematics.

- to promote the national development programmes on health , nutrition, hygiene and sanitation, family planning, and improved agricultural practice .

The activities of Package A programme is in a learning group , which is organized by a group leader and tutors. Tutors or Facilitators are selected from among the villagers which had varied educational background . Generally their level of education is up to grade 9 . That is why all tutors , facilitators and learning-group leaders receive a special training for 3 to 5 days . By improving their quality of life , they have an opportunity to run a fund provided by the government . The profit they get have to be saved in Kejar.

After a period of time, they will have enough profit to run on their own . The first fund they received has to be returned to the government which will be given to other Package A learning groups.

Taking note of Indonesian fertile land there should not be any starvation among the people . To fight against malnutrition the government gives extensive training to the nutrition field workers which come from the community . As a follow-up of these activities they will do home-gardening of productive crops .

The health of children under 5 years old is given priority (BALITA). Mothers who participate in PKK, (family welfare education activities), have meetings to discuss how to nurse babies properly , how to cook by using local produce which is inexpensive but rich in vitamins and protein . To reduce population growth , they have to motivate women to practise family planning ; that is every family must have a small family. This programme has been implemented with first priority. This programme is supported by food, facilities (building, tools or cars), manpower and fund. This programme is being run through formal and non-formal channels.

To overcome housing problem , people are motivated through the meetings of family welfare educational organization and village community organization. Also, thousands of houses are built by Real Estate or National Housing.

Bare forest, spoilt lands are taken-up by Community Plantation or as we call it PIR (Perkebunan Inti Rakyat). This project will spend a lot of money for replanting oil palm, clover, coffee, rubber and for giving extension to people living in surrounding areas.

Finally , in order to discourage the people from wasting their money on expensive traditional ceremonies, media of religious extension can be used . Eventhough it is difficult because of their belief but we find it to be in progress . The aims could be achieved because of bad economic situation faced by the people .

Flow Of Non-Formal Environmental Education Programme

The environmental problems in Indonesia are not faced by an individual or a certain group only but it seems to be a national problems where everyone has the right , the duty and the competence to have a good and healthy living environment.

Because of the serious problems on environment , the government has issued a policy through laws of Republic of Indonesia No. 14 , established in 1982 , about the main appointment of environmental control .

A. Principles and objectives

Environmental control in principle is to control the appearance and the proportion of environmental consequences in order to improve human welfare.

For that reason environmental control has the following objectives:

1. to achieve a well-balanced relationship between human and living environment ; as the objective to build complete Indonesians.

2. to control the use of natural resources.

3. to make Indonesians as supervisors of living environment.

4. to improve the environment for the needs of the present and future generations .

5. to prevent the state from the negative results of foreign activities which can damage and pollute the environment.

As we know , social and economic developments will influence the environmental situation. On the other hand if the environmental factors are processed continuously , this will disturb the production system at the end. If we do not care about this dangerous situation it is impossible to invest money for a long period of time. As a result poverty will occur again and this country will remain under developed, because a bigger fund is difficult to get.

The above situation will increase population growth along with its difficulties i.e. population explosion, rubbish, bad sanitation and not enough water for the daily needs.

B. Technical Approach Of Implementation

In order to avoid polution caused by smoke emissions from industrial activities and motor vehicles , improper logging which spoils lands and causes flood in rainy season and dryness in hot season , we need to take action be it humanly or non humanly.

1. Humanly steps.

Human as implementor of development , has a great role in achieving successful development , and also to avoid polution so as to have a well-balanced nature that we need.

a. Extension.

Community ought to be taught on how to control the environment . We have to inform them how carelessness can cause disaster which can kill many people in surrounding areas. It had happened in Mexico in 1950, in London 1952, in Tokyo 1972, and in India 1985 . Indonesia as a developing country could suffer the same situation i.e. in East Java , Surabaya , Gersik and Jakarta , the capital of Indonesia.

b. Motivation.

When the people are aware of the danger caused by environmental pollution , we can tell them to take care of it . Besides , when there is a national celebrations, government or community can hold competitions on environmental health . If we do not succeed this way , we have to prosecute or fine those who pollute the environment.

2. Physical steps.

There are two ways , long-term and short-term

a. Short term.

1. To create artificial forest in industrial areas . But the problem is , a lot of money will have to be spent . Especially for areas which are crowded with people.

2. Strict control by giving extension to industries on waste water or gas problems .

3. To set-up new industry , employers have to meet certain requirements; among others it must be far from residential geologically and meteorologically i.e. the height , climate , wind , cost and land .

4. To avoid air pollution , all kinds of engines should use the premium petrol . It will produce little CO2. Besides , the exhaust must be installed with after burner.

5. To develop pleasant housing and job safety in industrial sector and to coordinate all environmental safety activities . If it extends widely it must be handled by an operational agency which works under auspicous heads of district , according to law No. 5/1974 of the principle of local government.

6. To develop clean environment which is neat and interesting.

b. Long term.

1. Industrial location planning or traffic system through town planning.

2. To develop survey on environmental problems which happens in community i.e. rubbish, waste water, spoilt lands.

3. To implement Indonesian law No. 4, 1982, on main environmental control.

C. Out put

Studying from the experiences of developed countries , such as Japan, Britain etc, Indonesia in its government structure, has appointed a state minister who is responsible for living environment and population. The ministry is called Ministry of Population and Living Environment, which is governed by Prof. Dr. Emil Salim. Throughout Indonesia there are survey projects on living environment at the universities. The activities of these surveys must be reported to State Ministry of Population and Living Environment, and then forward them to the sectors.

At provincial levels there are Population and Living Environment Bureaus with their functions to implement all policies from Jakarta. And then through Family Welfare Organization, item No. ? which is the control on living environment is being directed.

D. The Problem

In implementing the non-formal environmental programme, the problems found are as follows:

1. Limited number of experts who know about the environment.

2. Difficulties in getting information and communication of certain areas of Indonesia because of the geographical location which consists of thousands of islands.

3. A more important problem is that people are ignorant about the danger of polluting the environment and therefore act unconcern.

4. Because of their business many people do not care about polluting the environment.

Non-Formal Environmental Education Programme

It is stated in the Republic of Indonesia's constitution that freedom belongs to all nations and the Indonesia's Guidelines of State Policy states that educational and environmental problems belong to Indonesian people so that everyone has to take the responsibility to solve them. Consequently, ways to overcome environmental problems must be implemented through both formal and non-formal channels.

A. Formal Channel

To achieve the objectives of living environmental control systematically , every curriculum from grade 1 to 12 must be born. To implement environmental education effectively for grade 1 to 6 , there ought to be an environmental education programme model which is integrated in the previous curriculum . This model expresses the curriculum objectives of the environmental educational objectives . To achieve these objectives , we have to prepare the topics and sub-topics of environmental education . Implementing this model , every teacher should be able to improve each sub-topic so the sequence and weight of the environmental learning materials will be fitted with the learners thinking development . Environmental educational objectives formulation for children of grade 1 to 6 are as follows:

Convey to them on how to act and what sort of attitude to have to control environmental problems faced , logically and responsibly so as to provide a better future for everyone.

It will be the same for grade 7 to 12, and University curriculum.

B. Non-Formal Channel

Monolithic is the strategic approach of environmental education . That means every opportunity we have in meetings or community activities, the environmental problem is the only topic to be talked about. This channel can be used in these sosial organizations i.e.

1. Family Welfare Organisation, women lobby such as Wives of Indonesian Civil Servants Organization and Wives of Indonesian Army Organization , religious organization , Indonesian Youth National Committee, Scouts movement etc.

2. Cooperative Institution , Mosque Foundation, Church Foundation , district society , etc.

3. Saving group , listening group, Contact, Nutrition Group, Tutors Group, etc. This programme can be carried out by appointing the LKMD (Village Community Institution) as standing committee.

Besides these , through the governmental or non-governmental Institutions, it is suggested that there should be active participation in living environmental activities . Because of the equal importance between the problems of living environment and population these problems cannot be separated and must be discussed simultaneously. All formal or informal leaders and key persons should be involved with these activities.

Diagram: Environmental Education

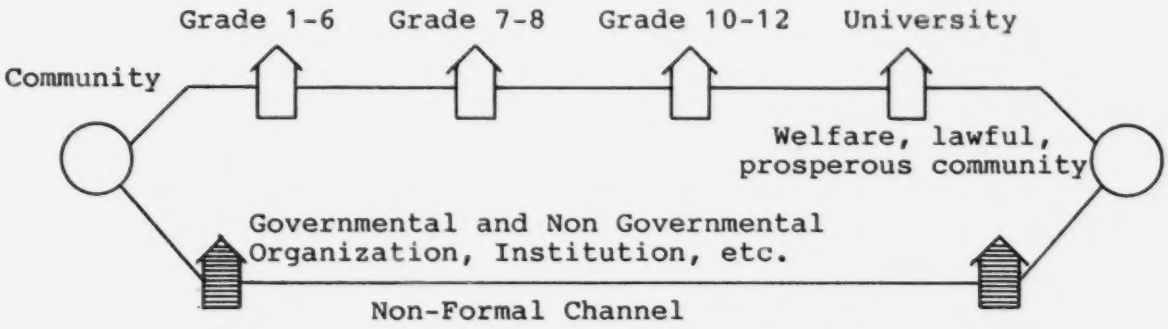

Illustration: Life Environmental Strategy Through Channel Aproach.

Suggestions On How To Select The Priority And Techniques And How To Convey The Development And Implementation For Non-Formal Environmental Education

As we know, solving environmental problems cannot be delayed, because it can become a national problem, and a world problem as well. It is clear that the problem does not belong to an individual, group or a clique. So the success of development will not be felt if we do not consider living environmental factors. Looking back to the arguments which had been discussed before, we can make the priority of facts as:

A. Human

It means, the community who wants development must be more aware of the living environment problems .

B. Location

Use the decentralization system . Do not wait for every activity to be instructed from the headquaters ; we have to do what is to be done . It means, the Non-Formal Environmental Education Programme could be done in all the Indonesian land, even in rural areas . Because of limited fund, and the strategy taken is to select some provinces to lead . If the objectives of living environmental education are achieved , then they will lead selected districts, and then districts will select some sub-districts, and finally sub-district will lead the selected villages . Looking at the result achieved locally, it is hoped that they will communicate with each other. Other villages will study from selected villages . This system is called the UDKP system.

C. Approach Techniques

Firstly, we have to approach the key persons, informal leaders, and formal leaders and then invite them for discussions . The topic which should be talked about is living environment , then let them do something as a follow up.

D. Experts

Living environmental problems are very complex so that one problem will relate to others and form a chain. For this reason, we have to have experts as soon as possible to plan the clean, beautiful and nice towns. Besides, expert are needed for activities to overcome environmental problems which are very complex.

Conclusion

From the arguments above some conclusions can be made and they are as follows:

1. The environmental problems are very complex so it is impossible to solve them individually, instead it should be integrated and it also needs proper town planning.

2. The objectives of environmental programmes can be achieved through formal and non-formal channels.

3. Every one , including members of any community , and both non-formal and the formal leaders must bear the responsibilities of carrying out living environment.

4. To decide selected areas as laboratory or sample site.

5. Every country in the world has to declare laws of how to carry out control on the living environmental problems and then expressed it operationally , and finally has to implement them by integrated sectors.

Closing Word

The ability of adaptation to our surroundings is satiation. We have to overcome this situation in the near future. Modern man are not aware of these themselves , they only create famous architecture among the environmental pollution.

People are suffering from various pollutions caused by industries, it looks like "...as mushroom grows in rainy season", these are the creation of human themselves. The well-balanced nature for growing up will disappear soon. The natural purification system of the environment is out of adaptation ability. Fortunately, in this occasion, I ask everybody to think, implement and control our living environment which will be inherited by future generations.

Youth Target Aged 15-30 Years
Who Never Attended School And Unemployed.

	Employed	Unemployed
Schooling	120,000	4,133,000
Not schooling	21,570,000	14,366,000

Source: Balitbang dikbud 1980.

NON - FORMAL ENVIRONMENTAL EDUCATION IN MALAYSIA

BY DR. KIEW BONG HEANG

Introduction

Non-Formal Environmental Education is about a decade old in Malaysia and developed in parallel with Formal environmental Education. Non-Formal Environmental Education is largely carried out by Non-Governmental organisations and its development has been spurred by the increased deterioration of the environment resulting from the accelerated pace of development, namely land development and exploitation of natural resources such as minerals and timber.

With time the need for better-organised non-formal environmental education materials becomes more pressing particularly in view of the recent developments in mass media tools and methods. There is a shift from radio to television which has become one of the most sophisticated and attractive media of communication. The number of individuals reading newspapers has also greatly increase with the increase in literacy in the country. So today television and newspapers are the most important media for non-formal environmental education, to familiarised the public with environmental problems.

Less powerful methods, such as giving public lectures and seminars, still have an important role as they are more personal in nature and allow interaction between people. Field excursions are also useful in letting the public see for themselves. In non-formal environmental education all venues must be exploited and used where and when possible.

The reasons these activities are at a low level are firstly due to the lack of funds and secondly are due to the lack of full-time personnel to carry them out. Despite these setbacks Malaysia, through the various organizations interested in the environment, has done remarkably well in educating the public on matters related to the environment and in gaining their interest and support.

Background Information on Malaysia

Malaysia is a federation of 13 states covering an area of 329,749 square kilometers (127,581 sq. miles) including Peninsular Malaysia, Sabah and Sarawak in Borneo. It has a 4,025 kilometer long coastline and some 418,000 square kilometer of coastal shelf. There is about 24,000 kilometers of road and 12 million square meter of industrial estate. Our population is 15,665 million in 1985 with an expected population of 18.8 million in 1990. The recent government population policy has changed to one of high population growth. Based on a growth rate of 3.2% per annum, the country hopes to have a population of 70 million in 115 years time. In 1984 the labour force available in the country was 37.9%. In 1980 the number of occupied housing units with access to adequate toilet facilities was 79%.

In Peninsular Malaysia 55% of the land area is still covered by tropical rainforest. There are about 8,000 species of flowering plants of which 3,000 species are timber trees, 1,000 are orchids, 300 palms and 60 grasses. There are 24 species of conifers, 500 species of ferns besides the lower plants. For animals, Malaysia has about 700 species of birds, 332 species of mammals, 300 species of reptiles, 156 species of amphibians and 300 species of freshwater fishes. The number of lower animals reach a staggering total with 1,000 species of butterflies, some 7,000 species of moths and some 1,000 species of spiders and related arthropods. Of these plants and animals some 60 to 70% live in the lowland tropical rainforest which is currently being developed for agriculture and other land use purposes.

Malaysia's economic prospects for 1985 forecast a national economic growth rate of 6.7%. Consumer prices are expected to stablise at around 5%. The overall balance of payments is expected to improve with the current account registering a lower deficit than 1984, that is at $49 billion. External reserve are anticipated to increase and be sufficient to pay for 3.6 months of retained imports. The Federal Government is expected to register a surplus in its current account amounting to about $79 million.

The country produces 37% of the world's total production of tropical hardwood timber. It supplies 40% of the world's raw natural rubber and some 70% of the world's latex concentrates. There are about 1.1 million hectares of oil palm in the country with some 159 mills processing about 2.8 million tonnes of crude palm oil beside 48 refineries handling further 3.4 million tonnes. In 1984, Malaysia produced 1,580,000 tonnes of rubber and exported 31.5 million cubic meters of timber. However a decline of 3.5% in timber export is expected from 1983 onward due to the Forest Conservation Policy being implemented. About 21,650 tonnes of pepper was produced in 1984, besides 90,000 tonnes of cocoa and 155,700 tonnes of pineapple. On the petroleum front, Malaysia produced 440,000 barrels of oil a day and 31.32 million cubic meters of gas a day.

Major Environmental Problems in Malaysia

The perception of the various environmental problems in Malaysia is dependent on the awareness and knowledge of the individuals concerned. It is a matter of their tolerance, threshold and sensitivity. What is considered a problem by some, is not a problem to others. The recognition of environmental problems is particularly affected by the educational level of the individual, the politics of the country and the state of the economy of the community effected.

Environmental problems which effect every individual in Malaysia, have been the major concern of a few enlightened individuals and organizations for more than 40 years. It became the concern of the government and was incorporated in the Third Malaysia Plan (1976) and led to the establishment of the Division of Environment under the Ministry of Science, Technology and the Environment. It is only recently that the community has taken an active interest in environmental problems. This can be seen in the Papan Issue (1984-85) where by the community affected come out in protest and took legal action to protect their rights when their health might have been affected by radiation from an industrial waste sited close to their homes. Earlier on, the community affected tended to leave matters in the hands of non-governmental organizations, as in the case of quarrying at Batu Caves (1981-82).

Although environmental problems affect everyone in Malaysia, the issues are largely championed by the middle class citizens, namely the professionals who are financially secure, have a good educational background, an awareness and sensitivity of the problems involved and sense of responsiblity to act. The poor and working people generally are so involved in earning a living that they have no time or energy to actively participate in environmental issues affecting them unless it endangers, or causes the belief that the problems endanger their lives. The rich can buffer themselves from existing environmental problems and are rarely involved in environmental issues, other than at time causing them knowingly or unknowingly.

Air pollution in major cities in Malaysia such as Kuala Lumpur, the Penang/Prai area, Johor Baru and Ipoh, is increasing bad with the increase in the number of motor vehicles travelling in the areas. The effect of the proposed reduction in the lead content of petrol from 0.8 mg to 0.4 mg per litre will be offset to some extent by the increase in the amount emitted from an increasing number of vehicles. Increase in population in these cities also means that there will be more housing which may contribute to air pollution from the burning of garden waste, which is not usually accepted by the domestic waste disposal services. The emission standard enforced by the Department of Environment does help to keep the contribution of factories and other industrial establishment within limits - important because in many areas factories are sited in close proximity to

residential areas. However, as there is no ambient air quality standard nor environmental impact assessment with the view of a holistic analysis governing land use planning, increase in the number of factories can cause the resulting ambient air quality to reach a level that is unacceptable to human health.

Our river systems are not spared from pollution problems, 42 rivers mainly on the west coast of Peninsular Malaysia are reported to be polluted. Despite improved regulation on discharge standard, such as the reduction of acceptable BOD level from 500 to 50 ppm for oil palm and rubber factories, these rivers are still polluted. Agrobased industries are not the only cause of water pollution. Domestic waste discharge also directly contributes to the problem. Despite the building of a sewage system in most of the major towns, reports of human waste discharge into rivers and the sea are still being reported and observed, as in a recent case in Perak. Pig farmers are also one of the major polluters of our river systems. Land clearance, mining and housing development cause severe silting of rivers. In the upper reaches of the rivers where logging is carried out on slopes, erosion and silting of rivers is also observed. Malaysia has a drinking water standard which allows us to drink tap water without fear of infection. We have an effluent emission standard of factories but what we lack is river quality standard to ensure healthy water bodies in the country. With time and population increase, we can therefore expect that most of the lower reaches of our rivers with high human activities upstream, will be polluted and dead to aquatic wildlife.

With increase in population, the disposal of solid waste (which is currently disposed of by land-fill method) will become a more serious problem with the increased shortage of land. The disposal of toxic waste produced by our industries will also increase with more factories. The management of solid waste and toxic waste disposal is currently handled by local councils and city councils and will need to become increasingly complex and use better technology and management.

Noise pollution from motor vehicle will develop into a problem to be reckoned within the future. In addition, there is an increase in the use of uncontrolled loud speakers by hawkers. Many motorcycles frequently operate without effective silencers. Heavy vehicles and Hifi or TV sets also contribute to the high noise level in high density areas. There is need for a noise emission standard in public places and residental areas.

At a more general level, the reduction in the land area under forest or vegetation in or around built up areas resulting from ill-conceived planning threatens the quality of our environment by increased temperature (the heat island effect) flash floods and periodic drought.

Current Non-Formal Environmental Education Programmes

A number of non-governmental organizations each have their own education programme within their own area of interest, which may be directly or indirectly concerned with the environment. The Malaysian Zoological Society which runs Zoo Negara has a Zoo Education Service which teaches children about animals and their needs and environment. It produces magazines and other printed matter purpose besides being involved in the television education services.

World wildlife Fund Malaysia has a mobile education unit going to schools providing film and slide shows on wildlife and their conservation. Friends of Earth Malaysia (Sahabat Alam Malaysia) has a similar programme for schools and the rural communities. It also publishes a monthly paper on the environment. The Consumer Association of Penang has produced a film on the crisis in the Malaysian environment. Environmental Protection Society Malaysia has a magazine on the environment and has made a series of slide shows on the environment available for hire to anyone interested. It also organises regular seminars and symposiums on environment issues. The Malayan Nature Society, (with a membership of about 3000) at its branch level organises excursion for its members and friends to areas of interest once a month besides holding an indoor meeting with a guest speaker on topics related to nature and the environment. The Society also gives talks to schools and public organizations on request. It has a special education programme on the rainforest in Endau-Rompin during the school holidays for school children in the Science and Heritage Expedition 1985 and runs special field courses for small children at the University of Malaya Field Studies Centre at Ulu Gombak. It publishes books on natural history, a scientific journal and a magazine of nature and environmental interest. The Society also organises seminar and symposium on nature and the environment.

Government involvement includes officers of the Ministry of Science, Technology and the Environment who give talks on topics related to the environment on request. It also publishes an annual report on the environment and other related papers.

As the public has become more environment conscious, newspapers carry regular articles on the environment under the heading of out-door or science articles. They also report on environmental problems. Television has an hours broadcast a week on each channel of shows related to nature and the environment, though the majority of these portray foreign wildlife and environments.

Future Plans For The Development Of Non-Formal Environmental Education

None of the organizations mentioned above appear to have any major plan for the development of non-formal environmental education owing to limited if non-existing funds for such purpose (apart from World wildlife Fund Malaysia which is a fund raising organization). The Malayan Nature Society with financial support from Esso will be producing a magazine on nature and the environment for school called Alam Pelangi (Rainbow World) which will be available free to school children for a year. It is hoped that thereafter school children will find it sufficiently interesting to subscribe to it. The Society will also be organizing field courses in more state in Peninsular Malaysia for children on the rainforest.

Some Suggestions For The Development Of Non-Formal Environmental Education Include:

1. education officers trained in non-formal environmental education.

2. production of more audio-visual packages such as slide packages and video tapes on the environment which are available to school on loan. They could be made available on loan through the national library system.

3. more articles on the local environment written for the press and magazines.

4. the establishment of a centre for the development of such environmental education resource materials.

5. Development of more materials related to the local situation to which the public can relate to rather than relying on foreign materials.

6. provide materials in the national language Bahasa Malaysia.

Conclusion

In view of the public interest and demand for information, there is an urgent need for the development of non-formal environmental education material in Malaysia. To facilitate such development more fund need to be made available to interested organization for the execution of related projects and programmes.

Acknowledgements

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SOME FACTS ABOUT THE PHILIPPINES: ITS IMPLICATIONS FOR A SOUND ENVIRONMENTAL EDUCATION PROGRAM 1/

By Dr. Porferio L. Basilio 2/

Introduction

The problems of the world today are enormous and growing endless with each passing day. Gone were the days when man was living in a garden of paradise characterized by an abundant clean air, abundant food, clean water, beautiful landscapes, etc.

Man, the dominant species living on this planet, ruled over the seas, the lands, the rivers, the lakes, the forests, and even in outer space. He has increased his number not only arithmetically but rather exponentially. In coping with the increasing needs of its population, man utilizes the resources of the earth, both renewable and non-renewable even to an unprecedented rate of consumption in the history of mankind. He does this in his desire to attain the good life. He also developed his technology for the use of the earth's resources at his command.

However, man now realizes that the products of his technology are giving him problems thereby affecting his life. Every forward leap in technology has its corresponding impact on his environment, both good and bad.

Man, therefore, must move quickly and aggresively to save himself from self-destruction. He could not remain complacent over the things going on that will continuously degrade the quality of his environment. If man was responsible in creating these problems, then he is also obliged to use his technology to solve them if he is to survive the crisis. For if he does not act and do something now to solve these problems, then nature will do it for him which will be very drastic and inconvenient whether he likes it or not.

1/ A Country Report read at the Subregional Training Workshop on Non-formal Environmental Education held at the Universiti Pertanian Malaysia,, November 18 - 22, 1985.

2/ Associate Professor, Pangasinan State University, College of Education, Bayambang, Pangasinan, Philippines

This gathering, therefore, is very significant and timely and a step in the right direction.

Some Background Information About the Philippines

A. Physical Aspect

Geographically, the Philippines is a part of Southeast Asia. Specifically, it lies between 4 23' and 21 25' north latitude and between 116 00' and 127 00' east longitude. It consists of a group of islands on the western rim of the Pacific and stretches more than a thousand kilometers north to south between Taiwan and Borneo. The country strategically lies within the area of nations that sweeps southeastward from mainland Asia to Australia. North of the country are the Republic of Taiwan and the people's Republic of China, to the northeast is Japan and to the south and southwest are the other Southeast Asian nations of Burma, Thailand, Kampuchea, South Vietnam, Laos, Malaysia, Singapore and Indonesia. At its extreme southeast are Papua New Guinea, Australia and New Zealand.

The total land area of the Philippines is 300,000 square kilometers with Luzon, the biggest island accounting for 141,395 square kilometers. There are 7,107 islands and islets of which only 2,773 are named making it one of the largest archipelago in the world in terms of number component islands and islets. Mindanao, the second largest consists 95,5587 square kilometers. Luzon and Mindanao combined already constitute about 70% of the total land area of the Philippines. The country, being an archipelago, is elongated and fragmented like broken beads of a rosary.

The climate is humid tropical and maritime with particularly high temperature, uniformly high humidity, and also with an abundant rainfall and is reasonably favorable for socio-economic development.

The present landforms of the Philippines has come about through the complex processes of diastrophism, vulcanism and gradation. These landforms are very much interrelated with the origin of the Archipelago itself.

The Philippines has varied topography. Mountain ranges form natural barriers. Starting from Northern Luzon, the western side is occupied by the Ilocos Coastal Plain flanked in the east by the Central Cordillera. Cangayan Valley lies between the Central Cordillera and the Sierra Madre Mountains that extend to the shores of the Pacific Ocean. In Central Luzon, the western margin is occupied by the Zambales Mountain system, then by the Central Plain; in the east is a continuation of the Sierra Madre.

The highest peak in the Archipelago is Mt. Apo in Mindanao with an elevation of approximately 2,954 meters above mean sea level. Mt. Pulogl, located in Luzon, is the second highest peak and rises to a height of 2,928 meters above mean sea level.

Of approximately 52 volcanoes scattered all over the islands at least 13 are active. The famous Mayon Volcano in Bicol possesses an almost perfect cone with slopes seemingly coming to a point at the summit. Also known is Taal volcano in Region lV, one of the lowest volcanoes in the world. It is situated in the midst of Taal lake and holds another deeper lake within its own center.

Among the country's natural and man-made wonders are Tagaytay City with its view of Taal Volcano, the famous bamboo organ of Los Pinas, the hot springs of Los Banos, Pagsanjan. Falls, the Banaue rice terraces, Mayon Volcano with its perfect cone, the Hundred Islands of Pangasinan, and the Tiwi Hot Springs. Top tourist attractions are the Ati-atihan Festival of Lueban, Quezon, the Canao Festival of Mountain Province and the Santacruzan at the Nayong Filipino and neighbouring communities throughout the country.

B. Economic Aspects

In the Philippines, human settlements are better developed and highly concentrated on the plains. Such a situation will remain true even after the country has attained an agro-industrial economy. This is to be expected because manufacturing industries are generally built on plains where the ease of transportation facilitates the bringing of raw materials to the factories as well as the distribution of finished products to the consumers.

The Philippines is endowed with moderately rich natural resources - the soils, waters, forests, minerals and fishery resources are among the precious heritage of the Filipino people. These are, however, not yet fully developed and utilized so much that we are still basically an agricultural economy and a raw-material exporting country.

In the economic field, the financial position of the country has become more stable between 1972 and 1983 where the national income (GNP) nearly doubled, growing on the average by 5.5 percent every year.

The industrial sector was restructured during the seventies, increasing its share in the total economic activity from 29.5 percent in 1980 surpassing that of agriculture. There was a continuing energy development through the Ministry of Energy. The country has reduced its dependence on imported oil from 95 percent in 1972 to 57 percent in 1984. This spectacular performance is largely attributable to serious efforts to harness

geothermal, hydro, coal, and other unconventional sources of energy.

Also, since 1972 , the national infrastructure program has focused on providing facilities to support economic growth, accelerate countryside development and uplift the living standards of the people. There was access to electricity in the rural communities. There was also an increase in road network.

To support agricultural development, the government expanded irrigation system. Thus come the Pantabangan Dam in Central Luzon, the Magat Dam in Northeastern Luzon, and another one soon to be started in San Roque , San Manuel, Pangasinan in Central Luzon. It must be pointed out that the earlier dams were constructed in Mountain Province , Angat Dam in Bulacan all in Luzon. Electrical energy is likewise produced in these dams using hydropower as a source of energy.

Policies in natural resources development and management aimed at a rational and efficient use of resources while promoting conservation and protection of the environment was also adopted by the government since 1970.

C. Social and Cultural Aspects

Philippines population is predominantly young. There is a high proportion of the younger age group (0 - 14 years) although a downward trend has been observed since 1970. This group comprises 42.04 percent of the total population. Maintaining an upward trend, the productive age group (15 - 64 years) constitutes 54.56 percent in 1980. The proportion of the older age group (65 years and over) increased by 0.54 percentage point between 1975 and 1980.

As of May 1, 1980 the Philippines registered a total population of 48,098,460 or an increase of 6,027,800 persons over the last five years. The population, composed of 24,128,755 males and 23,969,705 females, grew at an average annual geometric growth rate of 2.71 percent. As of September 9, 1983, the total population was recorded at 53,162,000 up by 1.314 million. The growth rate as of November 11, 1983 was 2.47 percent.

The Philippines society is in the process of social change. For some time already in the past, it has been struggling for a just and a prosperous society . The reforms that have been effected since 1972 in the economic and social spheres have undeniably led to a marked improvement in the quality of life of the Filipino. Much more remains to be done, to be sure in transforming Philippine Society and in securing our peoples economic and social well-being. But guided by the Filipino ideology and adhering closely to the fundamental objectives of the Democratic Revolution, the entire Filipino people have benefited from the development programs - in agrarian reform, in

education, in housing, health, labour (especially its overseas placement and employment program for Filipino professionals, technical and service workers).

D. Major Environmental Problems of the Country

Rapid Increase of Population

Population growth exerts pressure on natural resources for food and other amenities. The recorded population growth rate of 2.71 percent in 1980 and 2.47 percent in 1983 are considerably high for a developing country like ours where job opportunities and natural resources are not plentiful.

Some of the underlying causes of rapid population growth could be attributed to early marriages among women, indifference of some to the idea of family planning including the use of contraceptive devices in birth control. Also, the value orientation of some towards having large families, an Asian value, could be a contributing factor. Moreover, there was an improvement in the primary health care delivery system of the Ministry of Health so that mortality rate among the population decreased considerably.

Our government has a soft stand on the matter and respects the decision of the human individuals. Nevertheless, large family size is discouraged. As a proof, tax exemption for gross income is limited only to four legal dependents starting in January, 1972. Besides, the christian doctrine (Catholicism) encourages only rythm as birth control mechanism.

Deforestation

Presently, the hills and mountains are wanting in vegetation cover except in protection forest or watershed areas. It is already known that it is in tropical rainforest ecosystem where diverse species of flora and fauna are found . Besides, forest exert a great influence on the climate of the place.

To prevent the rapid depletion of our forest resources, a selective log export ban has been imposed. The exportation of processed and semiprocessed timber and non-timber forest products is being vigorously pursued. The development and efficient management of natural resources is tied to priority projects in food , energy, industry, exports, housing, and construction. By implementing ecology-oriented programs such as the Program for Forest Ecosystem Management (PROFEM), and the Forest Occupancy Management, the government sustains the effort to conserve the environment thereby providing for the resource requirements of present and future generations.

Soil Erosion

Considering the rugged topography of the Philippines, top soil is lost due to run-off resulting to the conversion of fertile lands into marginal lands. Besides, there has been an observed change in the pattern of rainfall during the rainy season where there is accelerated rainfall over a short period of time resulting in floods and destroying lives and property.

To remedy the situation, the Ministry of Education, Culture and Sports (MECS) launched tree planting programs participated by school children, students, teachers, concerned citizens and government personnel. Such programs like the "Alay Tanim" and the"Greening Project" came into existence and are handled by the Ministry of Human Settlements. Also, the Bureau of Forest Development under the Ministry of Natural Resources has a continuing program of reforestation.

Water Pollution

This environmental problem is common among inland waters which eventually find their way into the seashores. These water bodies are affected by the introduction of wastes or effluents from manufacturing companies of food and chemical products. The wastes find their way into river tributaries resulting to cultural eutrophication. In Laguna de Bay, the largest lake in the Philippines, this resulted in fish kills . In the case of the Lower Agro River , heavy metal pollutants from mine tailings upstream inhibited the growth of phytoplanktons thereby affecting the base of the food chain in this river ecosystem. So, fishes are no longer abound as before in this waterbody.

In this regard, the mining firms and the chemical and food - processing companies have been warned by the National Pollution Control Commission (NPCC) to institute anti-pollution structures - water treatment facilities, or mine tailing impoundments - before wastes are discharged into river streams or other channels. Others were fined and their business operations were suspended.

Air Pollution

While the Philippines enjoys a good ventilation of its atmosphere because of its climate there is to some extent a problem of air pollution especially in thickly populated areas in the metropolis like Metro Manila and suburbs. These air pollutants come mostly from the exhausts of cars and trucks and oil-fired electric generators. At times, the concentration of air pollutants exceeded the maximum allowable limits set by the NPCC. It is known that in some previous studies conducted along

this line,high incidence of respiratory ailments among the inhabitants coincided with peaks of air pollution episodes.

To remedy the situation, buses and jeepneys are subjected to pollution tests by the NPCC. There are still constraints toward the full implementation of anti-pollution measures.

Endangered Species

There has been a cause for alarm over the fast disappearing rare species of animals in the Philippines such as the monkey-eating eagle in Mindanao and the tamaraw in Mindoro of Luzon.

The government, through the Parks and Wildlife Office issued the corresponding Presidential Decree for their protection. There was also a ban on the collection of coral rocks from the coral reefs. Coral reefs are sanctuaries of small and large fishes within the continental shelf.

The Nuclear Power Plant Dilemma

With the completion of the Nuclear Power Plant in Morong, Bataan, with an expected capacity of 50 megawatts, there is now an apprehension by Bataan residents and concerned citizens of the country as to its safety. It is alleged that the plant needs some more safety mechanism to prevent a nuclear accident. There has been protests made. Until now the Philippines Atomic Energy Commission (PAEC) is studying the case.

Improper Garbage Disposal

This is a problem in highly populated areas such as Metro Manila. Improper garbage disposal by the consuming public results in clogged esteros and flooding occurs after heavy rains.

The underlying causes are the proliferation of plastic containers of chemical and food products among other garbage materials which are non-biodegradable, as well as the people's way of handling these garbage.

The Metro Manila Commission has engaged in dredging esteros and clogged canals . There is a need to educate the people too when it comes to the disposal of these garbage materials.

High Pesticide Residues

Farmers are using more and more pesticides in farming in their desire to produce more rice and vegetables. However, there is no guarantee that all farmers know when to harvest their vegetables after these have been sprayed with highly persistent chemicals. There were reported incidents of pesticides poisoning. Such incidents could still be multiplied several times more if the users of these chemicals are not properly educated.

There is not so much activity to improve the situation.There is a need for stricter enforcement of regulation regarding the use of such poisonous products.

Current Non-formal Environmental Program Objectives And Approaches To Implementation

It could be inferred that non-formal environmental education program is subsumed under the Non-formal Education Program of the Ministry of Education, Culture and Sports (MECS) this being a new horizon in the field of education especially among developing countries like the Philippines.

Program objectives for non-formal environmental education should be complimentary to the objectives of formal education and should focus on a sustained development of concepts, skills and values along environmental education. This should extend to a point wherein the individual could internalize the desired values by manifesting them in his behaviour. Such objectives can thus be defined as follows:

1. To help the out-of-school youths and adults attain a functional level of environmental literacy pertaining to the interrelationship between man and his environment.

2. To guide them (out-of-school youths and adults) in acquiring the optimum skills necessary for the study of the total environment.

3. To help them identify environmental problems and their underlying causes, and formulating ways and means of solving them.

4. To help them acquire positive social values and deep concern for the sustenance of a good environmental quality.

5. To develop in them the feeling of satisfaction and joy for participating actively in protecting and improving the environment.

6. To help them be conversant about the nature of environmental issues.

7. To provide them with the opportunities to be actively involved in finding solutions and making decisions for the solution of environmental problems.

Future Plans For The Development Of Non-formal Environmental Education

This activity calls for a multidisciplinary approach that will include disciplines in the natural sciences, the humanities and the arts.

The following suggestions are aimed to provide conceptual framework in the development and implementation of non-formal environmental education.

1. There must be a clearly defined goals and objectives to delineate it from what the scope of the formal education. The course contents should include topical content which are basic and arranged accordings to their levels of difficulty.

2. The implementors of such program must be identified and their roles properly defined.

3. There must be developed alternative approaches to program implementation. Materials for knowledge and skills development must be readily provided.

4. There must be a system of feedback mechanism so that the effectiveness of the program can be properly evaluated and improved.

Conclusion

There is so much to be done yet to improve the quality of life and to safeguard the quality of our environment. This could not be done by one agency alone. There is need for a concerted action by utilizing the expertise of people representing the different disciplines.

Careful and thorough planning is called for. The approaches must be down-to-earth considering the material and human resources of our country.

We hope to come out with a functional non-formal environmental education program in the years to come. We believe we can do this because we have the resources and the will power.

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NON-FORMAL ENVIRONMENTAL EDUCATION IN SRI LANKA

By A. K. GUNAPALA *

Introduction

The objectives of environmental education were discussed in detail at Tbilisi in 1977 and resolutions that have gained general acceptance were made (UNESCO,1980). There is no doubt that many environmental education programmes would have received an impetus by the Tbilisi resolutions . However , the actual strategy for incooperating environmental education to the existing system is still being debated (Forbes & Smith ,1984).

Even though the broad objectives of environmental education may remain the same for both formal and non-formal education , the approach and strategy of the two systems in applying environmental education (Forbes & Smith ,1984) has to differ .In case of the latter a vast audience with a multiplicity of interests and attitudes is approached and adjusting the programme to suit them is no easy task .

In the view of the abiding interest in the subject and varying experiments in the field of environmental education , a review of the work in progress and the future programmes is undoubtedly useful . The present paper is an endeavor in this direction . Comparison with similar reviews of the work in other countries would be a rewarding exercise .

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Background

Sri Lanka is an island 275 miles long and 160 miles broad, with an area 25,000 square. It is situated in the Indian Ocean, between 6 and 10 degrees north of equator, separated from India by a strait 22 miles wide.

The Central highlands of the country rise to a height of 8000 ft. and the are flanked by lowlands narrow in the west and south and broad in the north and east.

The south-west of the country receive annual rainfall of about 200 inches in some places and is no where less than 75 inches . Comparatively dry weather prevails in the rest of the island with an average annual rainfall of about 50 - 75 inches.

Rice is the main crop cultivated in the lowlands. It is the staple diet of the people and there is a centuries - old tradition and culture of rice cultivation. The other main crop in the lowlands , (which is mostly confined to the coastal belt) is coconut . It is one of the three major crops of the island which earns foreign exchange for the country, the other two crops being tea and rubber. Tea is grown mostly in the central highlands and rubber is confined to lands of lower elevations in the south- western sector. Minor export crops like cloves, cardamon, cinnamon and nutmeg have recently assumed importance as export crops . The distribution of landuse is indicated in Table (1).

TABLE 1

DISTRIBUTION OF LAND USE

Land Use	Hectares Equivalent	Percent
Total	6,369,331	100.0
1.Settlements and associated non-agricultural lands	19,534	0.3
2.Horticulture	586,309	9.0
3.Tree and other perennial crops:		
(a) Tea	259,473	3.9
(b) Rubber (1)	227,373	3.5
(c) Coconut (1)	250,464	3.8
(d) Other	54,029	0.7
4.Cropland		
(a) Paddy	510.677	7.8
(b) Land under devolopment	43,418	0.7
(c) Other	1,009,704	15.3
5.Improved permanent pasture	2,492	--
6.Grassland and scrubland	425,733	6.4
7.Woodland	2,899,457	44.2
8.Swamp and marsh	32,787	0.5
9.Unused land	43,147	0.7
10.Inland waters including salterns	204,734	3.2

Source: Aerial Survey based on a Colombo Plan Project - 1961

Apart from agricultural, tourism generates a valuable share of foreign exchange, and the export of gems is also an important source of revenue. The relative contribution of different sources to the national economy is indicated in Table (11).

Table II : Export Earnings

Rs.Million (SD.R Million in brackets)

Item	1983		1984	
	November	January-November	November	January November
1. Agricultural exports	1431.2 (55.3)	12559.4 (500.7)	2920.0 (111.5)	20917.3 (801.5)
1.1 Tea	990.0 (95.1)	7060.4 (281.5)	2063.0 (78.8)	14691.5 (563.0)
1.2 Rubber	225.7 (8.7)	2441.9 (97.3)	408.5 (15.6)	3110.1 (119.2)
1.3 Coconut	169.9 (6.6)	1700.4 (67.8)	334.6 (12.8)	1843.0 (70.6)
1.3.1 Kernel Products	114.2 (4.4)	1242.1 (49.5)	276.1 (50.6)	1312.0 (50.3)
1.3.2 Other	55.7 (2.2)	485.3 (18.3)	58.5 (2.2)	530.0 (20.3)
1.4 Minor Agricultural Products (a)	126.5 (4.9)	1356.7 (64.1)	113.9 (4.3)	1272.7 (48.3)
2. Industrial exports (a) (b)	928.2 (35.9)	7815.9 (311.6)	1094.7 (48.8)	11472.3 (439.6)
2.1 Textile and Garments	513.4 (19.8)	4151.9 (165.5)	637.6 (74.4)	6738.5 (258.2)
2.2 Petroleum Products	269.7 (10.4)	2431.6 (96.9)	297.4 (11.4)	3085.2 (118.3)
2.3 Other	145.6 (5.6)	1232.4 (49.1)	159.7 (6.1)	1617.6 (68.1)
3. Mineral exports	7.3 (0.3)	889.7 (35.5)	51.7 (2.0)	785.3 (30.1)
3.1 Gems	- -	708.1 (28.2)	40.4 (1.5)	582.9 (22.3)
3.2 Other	7.3 (0.3)	181.6 (7.2)	11.3 (0.4)	202.4 (7.8)
4. Other (c)	62.4 (2.4)	643.1 (21.6)	71.0 (2.7)	895.9 (34.3)
Total (b) Exports	2429.0 (93.9)	21808.1 (869.3)	4137.4 (158.4)	34070.8 (1305.5)

(a) Selected Items
(b) Adjusted
(c) Includes re-exports

Sources :Customs, Sri Lanka
Ceylon Petroleum Corporation

Source: Central Bank of Ceylon Bulletin, Dec 1984

The central highlands were opened for cultivation during the last 150 years. This resulted in special environment effects. Most of the rivers in the country have their origin in the Central highlands and the clearing of forests here was bound to have an effect on the river flow. A large segment of the forest cover in the country was in the hill country and the opening of the highlands therefore signalled the destruction of a significant part of the forest cover.

Rice cultivation receive special emphasis due to its importance in the staple diet and also due to the sentimental and even ritualistic attachment to it due to tradition. Land was and is being opened up, specially in the dry zone, for rice cultivation under irrigation. The largest of such schemes, the Mahaweli Development Scheme,which proposes to bring nearly 6 million acres under the plough is now being implemented. The opening of new land, cultivation of large expanses under irrigation, and the construction of vast reservoirs have important ecological implications.

Sri Lanka faces an increasing population, poor savings and unsatisfactory capital formation, along with a limited amount of available land for cultivation. The population increase was boosted with the introduction of western medicine and the control of diseases like malaria. The increased population was also exposed to better educational facilities. The result was the creation of a class of educated unemployed people.

The large agricultural base in relation to industry also means that the environmental problems are mostly agriculture based. Industry is beginning to have an effect on the environment and evidence of pollution due to industry are now visible specially in the cities.

Buddhism is the religion of the majority of the population (70%). It has provided an atmosphere of thinking which is favourable to environmental conservation. Taking of any form of life is considered a sin, and even the protection and promotion of plant life is held in high esteem according to Buddhist precepts.

The inroads of plantation agriculture and industrial development of present magnitude has however, not been integrated with the world view that prevailed with Buddhism as religion and subsistance agriculture as the economic base. The new developments, conveniently called " modernization ", were associated with high prestige. The task of the environmental educator is therefore to forge a link between the new developments and traditional social values.

Major Environmental Problems, Their Main Causes And Measures Taken For Their Solution

Major Environmental Problems of the Country and Their Main Causes

As the major economic base of the country agriculture generates important evironment issues. However, these issues may not be identified as being important due to the slow effect on the environment. Creation of large reservoirs and continued cultivation under irrigation can have important consequences. Increasing salinity in soil is likely and the daming of the rivers can cause saline water intrusion into rivers. The use of pesticides can result in their accumulation in the environment. Deaths due to poisoning by accident or through suicide is around 1000 per annum. Improper methods in spraying of pesticides is common. A systematic study of health hazards due to improper use of pesticides has not yet been done.

The problems of soil erosion and deforestation are also largely connected with agriculture. Deforestation has been identified as major environmental concern. The forest cover of the island is 1963 was 44% and today is only 21%. The present level is considered by ecologists as the minimum that should remain. Adverse consequences of deforestation like the destabilising of water flows, silting of reservoirs, soil erosion, intensifying floods have already been observed. Soil erosion has continued due to intensified agricultural activity. Shifting cultivation has increased with a larger population attempting to make a living out of the limited resource of land. Hillslopes in many areas are being cultivated with crops like tea and tobacco without proper attention for soil conservation.

Mention should be made here of coral mining, sand mining and gem mining, as three problems that have attracted attention recently. Coral mining occurs mostly in the south-western coastal belt and has intensified sea erosion. Sand mining in rivers has added to the severity of this problem. Gem mining has caused soil erosion and disturbed the river beds. Of a more immediate consequence is the fact that some persons leave the pits open after mining. In these pits water accumulate and stagnate making them suitables places for mosquitoes to breed. Malaria outbreaks have been common in these areas.

Even though the country is predominantly agricultural, the emerging industry deserve attention. Even before modern forms of industry began, there were older industries related to agriculture like copra and desiccated-coconut manufacture and the coir industry. The pollution caused by such industries can no longer be overlooked. Problems caused by coir dust-mounts has been brought to the notice of Central Environental Authority on many occasions.

Small enterprises like textile manufacture , leather, food , beverages and mineral industry are common. Recently larger factories for textile manufacture , fertilizer mixing , oil refinery , paper manufacture , cement manufacturing have been established . Adverse reports with respect to all these industries have already been received and some of them have caused considerable concern . Adoption of corrective measures cost a great deal , in some instances so that even the continuation of the industry may be uneconomical if these were to be adopted . These are some of the difficult decisions for a poor country fighting unemployment.

Our experience with the novel concept of industrial zones (even though not completely free from problems) has shown very positive evidence that pollution control can be more easily attended to under such concentrations . One advantage is that pollution can be confined and common treatment methods can be devised . Mistakes may however be committed . In order to attract investment , the promoter may not emphasize the need for pollution control measures.

Poverty and urbanization combine to produce serious pollution problems . The growth of slums in all poor countries generate similar unhealthy situations . Open sewers are found in many places and untreated sewage has also been found to be discharged to rivers . Improper methods of solid waste disposal create dumping grounds which are public nuisance and a health hazard.

Though air pollution levels have not been absolutely ascertained , the constituents in emissions from motor vehicles in Colombo and other urban centres now probably sometimes reached critical concentration levels . With improperly planned cities and poor roads such problems can be enhanced.

Measures Taken for the Solution of Environmental Problems

There is a long history of environmental conservation measures available in the country . Even the people who lived during the early period of our history had a code of ethics and conduct conducive to environment conservation . There is evidence that care was taken to preserve the forest in the catchments and also that cultivation patterns were regulated to minimize pest outbreaks and to economise water water use . Of course , the pressure exerted by a heavy population on limited resources was not felt to the same extent as today.

The Forest Ordinance of Sri Lanka was passed as early as 1907 even though it has been revised on several occasions . Several other departments , like the Health Department , the Department of Local Government , Labour Department and Agriculture Department have had regulations conducive to environmental conservation . In fact there are at present about

80 enactments in the statute books , that have a bearing on environmental conservation (see appendix 1) .

An examination of the recent developments indicate that there has been a strengthening of the legal frame-work for conservation . The new Constitution (1978) of the country refers to environment very clearly . Article 27 (14) of the Constitution states " The state shall protect , preserve and improve the environment for the benefit of the country " and Article 28 (f) adds further "The exercises and enjoyment of rights and accordingly it is the duty of every person in Sri Lanka to protect nature and conserve its riches " .

Among the more important Laws passed are :

(1) The National Environmental Act 1980.
(2) The Coast Conservation Act No. 57 of 1981.
(3) Natural Resources , Energy & Science Authority Act 1981.

The other significant development in the last decade is that tangible steps have been taken to develop an institutional frame-work to give a central direction and to co-ordinate the environmental programme by the establishment of the Central Environmental Authority (CEA) are summarised below :

(a) to recommend to the Minister, National Environment Policy and Criteria for protection of environment,
(b) to undertake investigations on causes and prevention of pollution,
(c) to conduct , promote and co-ordinate research on environmental issues,
(d) specify criteria for maintaining the quality of environment,
(e) to undertake investigation to ensure compliance with the National Environmental Act,
(f) to educate the public on environmental protection and management,
(g) to engange in long term planning in environmental protection and management.

It has been observed that the powers vested in the CEA , are not adequate to obtain compliance with a code of environmental protection and management . Changes in the Act which would give more powers to CEA are under consideration .

It is practically impossible even to summerise in a short essay the actual measures in operation for environmental management and protection because it would require the preparation of a summary of all action generated by the long list of laws in appendix I . Attention may however , be drawn here , to some of the solutions in operation for salient problems .

Reforestation

The Ministry of Lands and Land Development has launched a National Reforestation Programme , (Ministry of Lands and Land Development , 1982) where emphasis would be given , in addition to timber and pulpwood production , to the protection of watersheds and production of fuelwood in fuelwood deficient areas. A community forestry project (covering 4055 ha.) been launched where there would be public participation in forest planting . There is yet another scheme to replant the land where shifting cultivation has been practised . Heavy penalties have been imposed in illicit felling of timber .

The mammoth campaign to promote tree planting , directed by the Hon. Prime Minister is described in section 4 (iii) .

Soil Erosion

This problem has been recognized by the Central Environmental Authority as one which requires urgent attention.

At a recent meeting of the Environmental Council, the following decisions were made :

(a) Soil conservation should be included as an integral part of the Agriculture Extension programmes of the Ministry of Agriculture, and therefore, could be implemented through the extension field staff;

(b) Promotion of soil conservation practices should be properly amalgamated into the present Agricultural Extension Division and hence treated as one of the leading roles of District and Villages Level Extension Officers;

(c) All Agricultural Extension Officers should be given short - term training on Soil Conservation;

(d) Accelerated Soil Conservation programmes should be launched by the Ministry of Agriculture by making use of present staff specially to cover highly eroded areas;

(e) Active involvement of farmers should be obtained for soil Conservation practices through grass-root level institutions such as the Cultivation Committee;

Resource Development 1978-1982. Administration Report of the Ministry of Lands and Land Development, Colombo.

(f) Joint Public Awareness Programmes on the adverse effects of soil erosion and on remedial measures, by using soil conservation practices, should be started;

(g) Adopting of soil conservation measures should be made mandatory in all cases where land is allienated by the government.

Use of Pesticides

The Department of Agriculture is taking steps to disseminate information on the proper use of pesticides. The import of pesticides is now controlled by Government regulations. The CEA has also issued an advisory leaflet on the subject and its other promotionall efforts, have included this subject as one which demands special attention.

Coral Mining

Coral Mining has been completely banned after the recent disasters in which houses and roads were washed away into the sea by sea erosion. This does not however mean that law can completely stop it, and environmentalists are fully aware of the inadequacy of the law in ensuring proper conservation.

Current Non-Formal Education Programme

Non-formal environmental education is operative in many fields of work. For convenience, this work may be discussed under the following categories:

(a) Activities directed toward environental education by the Central Environental Authority and other institutions both Governmental and Non-Governmental directly concerned with the environmental issues;

(b) Ad-hoc programmes launched by individuals and institutions whose functions are not mainly environmental;

(c) Activities of the Non-Governmental Organizations.

In category (a), the bulk of the work so far is on the promotion of awareness on environmental issues. The reasons are two fold:

(d) The Environmental movement, when compared to those in developed countries, is relatively new. It is necessary that its different facets be brought to

light and discussed to enable the people to form attitudes and work plans;

(e) Laws to ensure environmental conservation are few and are not as far reaching as those of developed countries. The legislators seem to feel that development should bend under persuasion and not break under the pressure of law.

Below we draw attention to the work done by the Central Environmental Authority as the main co-ordinating body on environmental issues in this area.

(i) Seminars for Decision Makers, Plan Implementation Officers and Administrative Officers at Regional (District) Level

The seminar sensitises the decision makers, plan implementation officers and administrative officers at a regional level to environemntal problems in the region and educates them as to the possible solutions. Some solutions are beyond their scope as regional officers but the seminar has several district advantages:

(a) The seminar brings together members of one of the most influencial elite of a region. They represent the administrative elite and also to a limited extent, the political elite. They can directly and indirectly influence the other elite of the region, of which the other more important elite are the class of entrepreneurs;

(b) Even though the national level planning is beyond the control of regional officers, they influence national planning in the sense that many national plans in their formative stage involve consultation with regional or even grass-roots level officers. If they are properly exposed to the subject, when reporting about a situation at a local level, environmental concerns would influence their thinking;

(c) Within the limited scope the local officials have for planning and decision making, environmental concern would receive due attention after the officials have had exposure to the subject;

(d) Once exposure to a subject, one's knowledge gathers around the nucleus planted. Thus the end-results are not confined to the knowledge imparted;

(e) The seminar brings to light local environmental problems that may have escaped attention as those who see them so far many have not been sensitised to

perceiving problems in an environmental perspective.

(ii) Use of Mass Media

The Central Environmental Authority conducts two radio programmes a week. At present these are mainly devoted to tree planting and deforestation because the programmes are expected to support The massive tree planting campaign (see below), together with the assistance of several other agencies. Apart from regular scheduled programmes there are many talks and demonstrations organized by the Central Environmental Authority and covered by the radio and television. The newspapers also carry articles and features either directly written by CEA officers or as reports by journalists based on CEA briefs.

Special video films are planned by the Central Environmental Authority on important topics like water pollution. Several series of slides supported by commentry on subjects of environmental significance and being produced. These films and slides will be used in group discussions and lectures. A video film competition was also held and a few good films have been received. After a poster competition a few of the best ones were published in large numbers. The CEA is also planning to publish a supplementary reader for school children on environmental related subject, the first of such book being one on forestry. The CEA also participates in exhibitions where people gather in large numbers. It should be gratefully acknowledged that valuable assistance has been received for this work from UNDP/UNESCO.

(iii) 100 Million Trees Programme

A programme known as 100 Million Trees, spear-headed by the Hon. Prime Minister, Mr. R. Premadasa, under whom the Central Environmental Authority is functioning, merits special reference here. The only other programme of similar proportions the writer is aware of is the "masagana 99" of the Philippines, but that had agricultural development as its theme.

The main characteristics of this programme are :

(1) A national tree and a flower competition;

(2) A competition to select the best nursery in this island;

(3) An asociation with 100,000 houses programme;

(4) An ceremonial launching of the programme with His Excellency the President, and the Hon. Prime Minister and several other Hon. Ministers and Public Officials planting trees at an auspicious time on His Excellency the President's date of birth on the 17th September;

(5) The concentrated attention of the media on the importance of the occasion. Television, radio and newspapers gave extensive coverage to the event;

(6) The issue of posters, pamphlets and other publicity material to promote the idea.

The programme was an over-whelming success. All ranks of people, young and old, were seen planting trees by the road sides, compunds, gardens and the beach on the 17th September.

The campaign yielded very important results. Not only by having several thousand trees planted, but also by creating a massive awareness campaign on the importance of tree planting and forest cover. The trees planted on this date are still very prominently visible on roadsides and many other places. These serve as permanent advertisements on the importance of tree planting.

The national tree and flower competition has generated considerable interest on the flora and fauna of the country. To participate in the competition, a person had to not only name a tree and a flower, but also to write an essay justifying the selection.

The nursery competition has an important objective from the educational point of view . It spreads knowledge about nursery management and the discussions on the merits of establishing nurseries generate attention on tree-planting . The programme also enhances the supply of plants for planting and at the same time encourages the culture of plants that are rare , valuable and useful .

(iv) Pioneer Brigades

With a view to orient school children toward a favourable attitude towards environmental conservation , and to promote their active participation in conservation programmes in their localities , students are organized in groups operating in the form of scouts or cadets . The initial moves have shown very encouraging results . The Pioneer Brigades are organized by the Central Environmental Authority with the assistance of the Education Department .

(v) The Role of Non-Governmental Organizations

The Environmental Non-Governmental Organization (NGO) in Sri Lanka have a commendable record of work in educating the public on environmental issues . Magazines like " Loris" published by the Wildlife and Nature Protection Society are wellknown. Student Nature Clubs have been established in schools by this society. March for conservation is yet another NGO involved in mass education campaigns on environmental issues . Among the activities organized by this society are : route marches through cities and town culminating in rallies and award ceremonies , oratorical contests in school, festivals of wildlife films and the screening of conservation films and holding conservation exhibitions . Nation Builders is another society that has made a major contribution to forest planting through public participation. They have shown remarkable success in mobilising unemployed youths for Reforestation and Mass Education Programmes.

Future Programmes For The Development Of Non-Formal Environmental Education

It is evident that a lively programme of work on environmental awareness has been launched outside the school eduational system. Future programmes should be focussed on systemalizing and co-ordination. For this purpose two important aspects of work have to be accomplished :

(a) Assessment of the present levels of knowledge and perception of environmental issues;

(b) Demarcation of the areas in which improvement in preception and knowledge is desired;

(c) For the determination of (b) above, formulate a statement on the present and future environmental concerns of importance and priorities them, because the term "improvement" has to be defined in relation to a desired state.

Item (c) above is not an area of work that can be handled alone by an officer dealing with environmental education. It has a technical component to be determined by specialists in other areas of environmental management and protection.

A survey of the media coverage of environmental issues should be done to ascertain the present level of knowledge and perception. The writer has initiated action in this field.

Apart from content analysis, the writer has proposed a competition next year which should serve a dual purpose. The competition is to call for essays from members of the public and school children on the environmental problems of the area they

live. An analysis of the essays should reveal a good deal about perception levels. It would also bring to light several problems that one may not expect to be prevalent in a given area. This would be very useful information for the planners. The competition will also compell the participants to look at their environment from an analytical perspective.

It is observed that much work has been done so far to enhance awareness among the general public. Apart from general awareness we should provide more detailed information to the more educated groups of people in society. These include teachers. village level officials, native doctors and priests. The need to give more information may be illustrated by comparing a poster and a booklet. A poster is very effective in attracting attention to a major problem but it doesnot give enough information about the subject. It is therefore necessary to disseminate more information at least to the group that is more educated. A few booklets will be published giving more information on environmental problems.

Television has not yet reached the poor people in Sri Lanka but it is an effective medium among the more effluent. Television has a very high prestige value even though the reach is limited. The role of the middle class as people who influene public opinion at lower levels is important. It is planned to produce several (about 5) short video films of about 2 minutes duration. The cost is not heavy and not much time is consumed by such films. One subject, like river pollution, could be dealth with in each film. It also can be given a news value and broadcast with news bulletins. There after these films can be shown as attractive interludes in between other programmes.

It has also been observe that regional station of the Sri Lanka Broadcasting Corporations have not been sufficiently used in the past. The regional stations help us to address more specific audiences. For example the " Raja Rata Sevata" of Sri Lanka is situated in the region where paddy cultivation is dominant in any settlement, and the "Mahanuwara Sevaya" is "Ruhunu Sevaya" is broadcasting to the southern region where the main crops are coconut and paddy and the problem of sea erosion is common. More intensive use of these stations with at least one 15 minutes talk a month is planned for next year.

Another promising area we propose to expand is the use of Pioneer Brigades. Initial work with such a Brigade has given us useful feedback. The interest teachers show is tremendous. The Education Department is interested in the programme. A Brigade we established last year has successfully established an urban forest with great care and interest. The Brigades in other areas would concentrate on problems of special interest to them. However, an islandwide expansion is not expected. Forty brigades with 2000 students will be our target for 1986. More rapid expansion would be possible in 1987 supported by the experience we would gather in 1986.

A Novel experiment not being noted is a seminar for eminent writers and artists. The artists and writers mould the thinking and attitudes of the people and the message of environment is bound to be taken with interest by them. The knowledge they have can be improved by a seminar. One difficulty envisaged is that they may not find enough time to attend a seminar. However, inspite of a few absentees, we should be able to find a good audience.

There are many new developments in the field of environment. We should have a regular means of disseminating this information to the media and other selected individuals and institutions. For this purpose a Newsletter would be published regularly by the Central Environmental Authority.

The other objective mentioned above, that of co-ordination, has to be attained after discussion with other departments, institutions and individuals. Even at present there is a healthy cooperation among them because environment is a non-controversial issue. Better orchestration of effort seems possible.

Suggested Priorities

A baseline survey carried out by the Central Environmental Authority, using questionaires addressed to important officials indicate the following list of priorities :

(1) Deforestation,

(2) Soil erosion,

(3) Water Pollution,

(4) Industrial Pollution,

(5) Problem of Solid Waste Management

The writer wishes however to add the fact that a modification of this priority may be based on the fact that the country is mainly agricultural and the harmful effects, if any, in present cultivation practices should be looked into. Perhaps the use of pesticides and excessive use of irrigated water for cultivation are practices with cumulative effects that are not perceived at present. We should also include these in the priority list.

Conclusion

A great deal of work on environmental education has been accomplished by both governmental institutions. However, the need to give more purposeful direction and co-ordination of effort is observed.

Purposeful direction has to be backed by research, not only on environmental issues, but also on people perception of an attitude towards environment.

The nature of the environmental issues we face is changing fast with increasing modernization. The experience of developing countries in this regard has to be different from those of developed countries. Even a study of the situation in developed countries when they were going through a similar stage of modernization would not help us very much, because such situations prevailed in a different historical context.

It is therefore appropriate that we constantly review our programmes for environmental education and forge new strategies and methods to suit changing circumtances. It is hoped therefore, that the present Sub-Regional Training Workshop on Non-Formal Environmental Education, would lead us to more effective and fruitful programmes on environmental education.

APPENDIX I

ENVIRONMENTAL LAWS IN SRI LANKA

1 National Environmental Act No. 47 of 1980
2 Coast Conservation Act No. 57 of 1981
3 Marine Pollution Prevention Act No. 59 of 1981
4 National Aquatic Resources Research and Development Agency Act No. 54 of 1981
5 Maritime Zones Law No. 22 of 1976
6 Chank Fishery Act No. 8 of 1953
" " " " 22 of 1955
7 Pearl Fisheries Ordinance No. 2 of 1925
" " " " 3 of 1946
8 Water Resources Board Act No. 29 of 1964
9 National Water Supply and Drainage Board Law No. 2 of 1974
10 Colombo Municipal Council Waterworks Ordinance No. 18 of 1907
" " " " " No. 27 of 1914
" " " " " No. 08 of 1915
" " " " " No. 09 of 1916
" " " " " No. 09 of 1918
" " " " " No. 28 of 1921
" " " " " No. 25 of 1928
" " " " " No. 04 of 1932
" " " " " No. 23 of 1942
" " " " " No. 29 of 1947

11 Irrigation Ordinance No. 32 of 1946
Irrigation Act No. 1 of 1951
12 Irrigation (Amendment) Act No. 48 of 1968
13 River Valleys Development Board Act No. 51 of 1949
" " " " " No. 40 of 1952
" " " " " No. 46 of 1961
" " " " " No. 50 of 1961
" " " " " No. 6 of 1965
" " " " " No. 18 of 1965

14 River Valleys Development board (Amendment) Act No. 6 of 1965
15 Flood Protection Ordinance No. 4 of 1924
" " Act No. 22 of 1955
16 Fauna and Flora Protection Ordinance No. 2 of 1937
" " " " " No. 31 of 1942
" " " " " No. 12 of 1944
" " " " " No. 12 of 1945
" " " " Act No. 38 of 1949
" " " " " No. 44 of 1964
" " " " " No. 1 of 1970
17 Animal Act No. 29 of 1958
18 Wildlife Protection Society of Ceylon Act No 29 of 1968
19 Animals (Amendment) act No. 10 of 1968
20 Prevention of Cruelty to Animals Ordinance No. 13 of 1907
" " " " " " No. 19 of 1912
" " " " " " No. 43 of 1917
" " " " " " No. 09 of 1919

Prevention of Cruelty to Animals Ordinance No. 23 of 1921
" " " " " " No. 16 of 1927
" " " " " " No. 17 of 1930
" " " " " " No. 12 of 1945

21 Contagious Diseases (Animals) Ordinance No. 25 of 1909
" " " " No. 16 of 1912
" " " " No. 26 of 1921
" " " " No. 20 of 1922
" " " " No. 19 of 1923
" " " " No. 17 of 1930
" " " " No. 06 of 1935
" " " " No. 07 of 1939
" " " " No. 61 of 1939
" " " " No. 11 of 1941
" " " " No. 03 of 1946
" " " " No. 29 of 1947

22 Elephant Kraal Ordinance No. 1 of 1912
" " Act No. 22 of 1955

23 Botanic Gardens Ordinance No. 31 of 1928

24 Plant Protection Ordinance No. 10 of 1924
" " Act No. 6 of 1950
" " " No. 22 of 1955

25 Botanic Gardens (Amendent) Law No. 32 of 1973

26 Sri Lanka Fruit Board Law No. 30 of 1973

27 Felling of Trees (Control) Act No. 09 of 1951
" " " " " No. 30 of 1953

28 The Forest Ordinance No. 16 of 1907
" " " No. 11 of 1912
" " " No. 24 of 1918
" " " No. 23 of 1931
" " " No. 16 of 1935
" " " No. 30 of 1945
" " " No. 08 of 1947
(2nd January 1908) Act No. 34 of 1951
" No. 49 of 1954
" No. 13 of 1966

29 Forest (Amendment) Act No. 56 of 1979

30 Forest (Amendment) Act No. 13 of 1982

31 Coconut Development Act 46 of 1971

32 Ayurveda Act No. 31 of 1961

33 Urban Development Authority Law No. 41 of 1978

34 Urban Development Authority (Amendment) Act No. 4 of 1982
" " " " " No. 70 of 1979

35 Greater Colombo Economic Commission Law No. 4 of 1978

36 Mahaweli Authority of Sri Lanka Act No. 23 of 1979

37 Greather Colombo Economic Commission (Amendment) Act No. 43 of 1980

38 Town and Country Planning Ordinance No. 13 of 1946
" " " " Act No. 09 of 1950
" " " " Act No. 29 of 1953
" " " " Act No. 10 of 1955
" " " " Act No. 22 of 1955

39 Housing and Town Improvement Ordinance No. 19 of 1915
" " " " " No. 32 of 1917
" " " " " No. 42 of 1917

Housing and Town Improvement Ordinance No. 3 of 1929
" " " " " No. 34 of 1933
" " " " " No. 11 of 1935
" " " " " No. 17 of 1943
" " " " " No. 24 of 1946
" " " " " No. 57 of 1946
" " " " " No. 16 of 1947
" " " " " No. 29 of 1953
" " " " " No. 10 of 1954
" " " " " No. 53 of 1954
" " " " " No. 23 of 1956

40 Housing and Town Improvement (Amendment) Act No. 38 of 1980
41 Factories Ordinance No. 45 of 1942
42 Control of Pesticides Act No. 33 of 1980
43 Development of Councils Act No. 35 of 1980
44 Municipal Councils and Urban Councils (Amendment) Act No.42 of
45 Common Amenities Board Law No. 10 of 1973
46 Crown Lands Ordinance No. 8 of 1947
" " " No. 9 of 1947
47 Land Acquisition Act No. 9 of 1950
" " " No. 39 of 1954
" " " No. 22 of 1955
48 Land Acquisition (Amendment) Act No. 28 of 1964
49 Land Acquisition (Amendment) Act No. 9 of 1979
50 Land Development Ordinance (Chapter 464) No. 19 of 1935
" " " " " No. 8 of 1946
" " Act No. 49 of 1953
" " Act No. 22 of 1953
" " Act No. 60 of 1967
" " Act No. 16 of 1969
51 Agrarian Services Act No. 58 of 1979
52 Soil Conservation Act No. 25 of 1951
" " " No. 29 of 1953

53 Offences Against Public Property Act No. 12 of 1982
54 Colombo District (Low-Lying Area) Reclamational and Development Board Act No. 15 of 1968
55 Road Development Authority Act No. 73 of 1981
56 Mines and Minerals Law No. 4 of 1973
57 Atomatic Energy Authority Act No. 19 of 1969
58 National Science Council of Sri Lanka No. 36 of 1975
59 State Gem Corporation (Amendment) Act No. 64 of 1981
60 Mines Quarries and Minerals Ordinance No. 55 of 1947
" " " " Act No. 22 of 1955
60 Tourist Development Act No. 14 of 1968
61 Ceylon Tourist Board Act No. 10 of 1966

NON-FORMAL ENVIRONMENTAL EDUCATION IN THAILAND

BY DR. CHERDSAK CHOOMNOOM

Background Information

Physical

Thailand is situated within the Southeast Asian Peninsular. It is bordered on the East by Laos and Kampuchea, on the North by Laos and Burma, on the West by Burma, and on the South by Malaysia. Thailand has a land area of approximately 500,000 square kilometers, 45% of which is under cultivation while the rest is either grassland, forest, or devoted to industry. The country is divided into 4 major regions namely Central, North, Northeast and South.

Socio-economic condition

Thailand has a population of approximately 47 millions people ; of which 24 millions are males and 23 millions are females. 80% of the population live in rural areas while almost 6 millions live in Bangkok Metropolitan area . 95% of the population are Buddhists while the rests are either Christians or Muslims. Thai is the main and official language of the country.

The country has a per capita income of US $750 (1981), with 12.5% of the population has the per capita income of US $2,420 and 62.5% has US $272 per capita income .

The percentage of landless and near landless of the rural labour force is about 50% (12.7 mil))

Education

Thailand has a 6-year compulsory education. It has the literacy rate of appproximately 90%. At present, the National Literacy Campaign is being held to completely eradicate illiteracy in the country.

However the total picture of education in the formal sector is not really clear . Only a small percentage of children in the pre-school, primary (lower-upper), secondary (lower-upper) and

post secondary age groups are in school to pursue their education. For example , 1977 statistics show that :

	age	% enrolled in school
Pre-school	4-6	5.9
Lower Primary Educ.	7-10	10.5
Upper Primary Educ.	11-13	51.5
Lower Sec. Educ.	14-16	31.3
Upper Sec. Educ.	17-19	15.7
Post-Secondary	19-24	3.5

The statistic also shows that only 39.4% of the school-age population of 4-24 years old are in school.

Major Environmental Problems of The Country ; Their Main Causes and Measures Taken For Their Solution and Prevention

1. Shortages of fire wood for home consumption in the rural areas.

Woods are used to burn corpses , such that trees are in great demand in rural areas . According to one report , less than 25% of the land area in the country is covered by forest land , which is below the optimum level suggested .

Measures taken for the solution and prevention

Government agencies such as the Department of Forestry should be responsible to bring about public awareness and action. Non-government agencies such as Thailand Wild Life Fund campaign for the protection of wildlife and forest land areas. Attempts are in evidence though out of quite a concerted effort . Schools at various levels teach students on the uses and advantages of trees.

2. Misuses of Insecticides/Pesticides

Development brings both benefit and side-effects . In rural areas , people are spurred by new opportunities of making their lives more comfortable, they stretch available resources and use of insecticides and other chemicals to boost agricultural production. As a result, many of these farmers have suffered from the effects of chemical misuses, and some even lost their lives because of it.

Measures taken for the solution and prevention

The Department of Non-formal Education has integrated chemical uses as one of the components in the Functional Literacy program and various other means such as wall newspapers produced at the central offices as well as the regional and provincial headquarters.

Within the Ministry of Agriculture and Cooperatives various departments serves different functions towards understanding, and solution of the dangers of insecticides and pesticides.

3. The loss of forest land and watershed area

The loss of forest land has so many repercussions, resulting in many environmental and ecological problems. Without forest watershed area is gone, soil fertility will be lost because with the absence of tree leaves and vegetation, wildlife cannot survive and their wastes can no longer nourish the soil. Rain will be scarce pauperizing all forms of lives.

Forest in Thailand has been suffering from uncontrolled logging . The last satellite picture showed that out of the country's 320 million rais only 50 million rais or 20-25% remain forest land.

Measures taken for the solution and prevention

In the hills of northern Thailand lie the water source that feed all the major rivers that run southward which keep the plains fertile and the electric turbines turning. Residing among these hills are various tribes who practice slash and burn farming. Illegal logging are also practiced by illicit loggers from lowland. As for the tribes , since they are relatively powerless, education (Hill Area Education Project), and persuasion as well as some form of welfare programs should make them stay in one place , working on 'appropriate' occupation.

Various agencies such as the watershed area protection Division of the Ministry of Agriculture and cooperatives are working in these areas to protect the watersources .

Tougher and stringent measures are being enforced to prevent the clearing of forest land and watershed area in other part of the country.

4. Soil erosion and loss of soil fertility

With the loss of trees, coupled with intensive use of farm land for cash crops soil erosion is occuring rapidly, causing leaching and soil fertility loss downstream. Commercial fertilizers are expensive and unaffordable for most farmers; the result is low agricultural productivity for the farmers.

Measures taken for the solution and prevention

The government of Thailand has chosen the most poverty stricken area as a focus to launch the development . To rejuvenate the soil from erosion and loss of fertility especially in the focus area , the Department of Land Development has been charged with the responsibility to rejuvenate these land. The Department has taught farmers to make natural composts.

5. Presence of abundant toxic wastes

The study of the ESCAP revealed last year (1984) the alarming state of waterways and the Gulf of Thailand. They are polluted by both domestic and industrial waste effluent , solid materials, as well as pesticides . For example it was reported that:

- mercury levels in the urine of residents of 21 provinces near the Thai coast line showed growing exposure to mercury pollution.
- 84% of the shell fish samples collected in April 1979 from an open market in Bangkok contained V. parahaemolyticus , a pathogenic bacteria that may cause food poisioning and gastroenteritis.
- Grease and Oil were found in significant quantities in the bottom sediments, particularly near river mouths.
- 8 tons of toxic heavy metals are reported detected in the 4 major rivers in the Central Plains of Thailand Mae Klong, Chao Phya, Tha Chin, and Bang PaKong.

Current Nonformal Environmental Education Programme Objectives Approaches to Implementation , Results Obtained , and Problems Encountered .

The term environmental education in Thailand is used principally by students and academicians of the fields. Students graduated from the two universities i.e Kasetsart or Agricultural University and Mahidol University, return to their former positions they had held or saught new employments with state offices like the Ministry of Science and Technology's office of the Environmental Boards, as well as other private enterprises. From time to time various government agencies may announce a few openings for graduates to perform what they may vaguely call environmental education program.

In the Department of Non-formal Education, where the writer is from , the works that could be termed as environmental education is embedded into various programmes and projects. As an example, the writer helps coordinating and consequently is familiar most with a 6-year experimental Hill Area Education Project organized by a Functional Literacy Unit ,the project might as well be called **Hill Areas Environmental Education Project .** The reasons are : (1) the project seek to make improvement of the hill area physically , as the hills form the border and the bulk of northern Thailand where the country's vital water sources and watershed areas are located . The project also seeks to improve the quality of lives of the Thai population living in the hill areas of country , initially by increasing their participation and later on their self-independence and realization; (2) The association with various agencies bearing the title of 'environment' such as The Environment Boards, the Institute of Environmental Research , as well as the United Nations Environmental Programme in Bangkok which inform the writer that the people working in such agencies hold no reservation in categorizing the Hill Area Education Project as environmental programme.

The department of Non-Formal Education is involved in production of books and materials , and in teaching . The department is not in a position to give direct advice in term of technicalities like helping people to built dam or demonstrate to the people how to make compost . But we are making use of local experts to help the farmers and better if we could help the people to become aware of the presence of the experts , and make the experts and those who need their expertise join hand in making things better .

But sometime we cannot wait for the people to become aware of the danger (say) of losing traditional and cultural heritage. The department must also play the role of an initiator . The following illustrate the case in point .

The hill that is associated with folk tale must have been there since time immenorable and is well known to every Thai Nang Phanthurat hills lie stretched for a kilometer or more and the imagination of those who see the hills are burned aglow again every time . Soon a modern cement plant raised fear that it will carve out the local residents' motherly figure . A few major non-governmental agencies declared to preserved historical sites and landmarks rushed in to be informed of the plan to be taken by the cement plant . Agreement had been reached that the cement plant would carved out other hills not forming the Yaksini's figure . But later , renewed ennuendo reached us that carving , earth digging , and are moving closer to the Yaksini that they may damage it . The department took the initiative by writing a letter to inform one agency that take care of such matter which the latter promised to call other agencies to together look into the matter again and inform the department of the follow-up .

The approach could be easy, the results could easily be obtained if we did it the way we were working through the existing Hill Areas Education Project and the 'pet' project organized to preserve the Yaksini's hill of central Thailand. We just have to understand the system, work through it, and take the best advantage of it then we all can be proud of the result !

Future plans for the development of non-formal environmental education

Environmental education does exist in the system of non-formal education especially in the Department of Non-formal Education. It is included in numerous projects and programs with a clear purpose of making the environment better by raising the awareness of the people. The Thai people both in the urban and rural areas have been exposed to various media in different programs and projects. The impacts of these programs and projects are being assessed from time to time and it was found that the learners had changed from being indifference to more vocal, on behalf of themselves and their peers, and the environment.

But the environmental education changes all the time and as some one wisely said , the environmental education is a program or project run or organized by those who call themselves environmental educators or environmentalists...Then what are we doing in term of the environmental educational or activities ? Do we even call ourselves environmentalists or environmental educators ?

Let say we are. And this is the task we define for ourselves. At the Department of Non-formal Education we are organizing a taskforce which is headed by a Deputy-Director General, having 3 Division Directors as vice-chairman. The writer was being nominated secretary. We hope that by the time the first meeting is held (around 12 November 1985) we could decide what is the best strategy to go about in term of the non-

formal environmental education whether or not we go for (a) " separate unit approach " or (b) " infusion approach " or (c) " core learning kit approach ".

The Hill Area Education Project , a huge 4.0 million dollars project in the north might be considered either "a separate unit approach" or "a core learning kit". For it to be considered "a separate learning approach" it must be looked at totally as a kind of program within a Functional Literacy Program for both lowland and highland areas . Then it is only part of a program --- for people in the highland although in itself has wider ranging scope and more ambitious objectives. The Hill Area Education and the Project to Construct a Public Park to honour Her Royal Highness the Princess Mother could well fit in the " core learning kit approach " because they are both developed by separate organization. These are just examples of how we look and categorize our existing programs and look forward to our future plan of action.